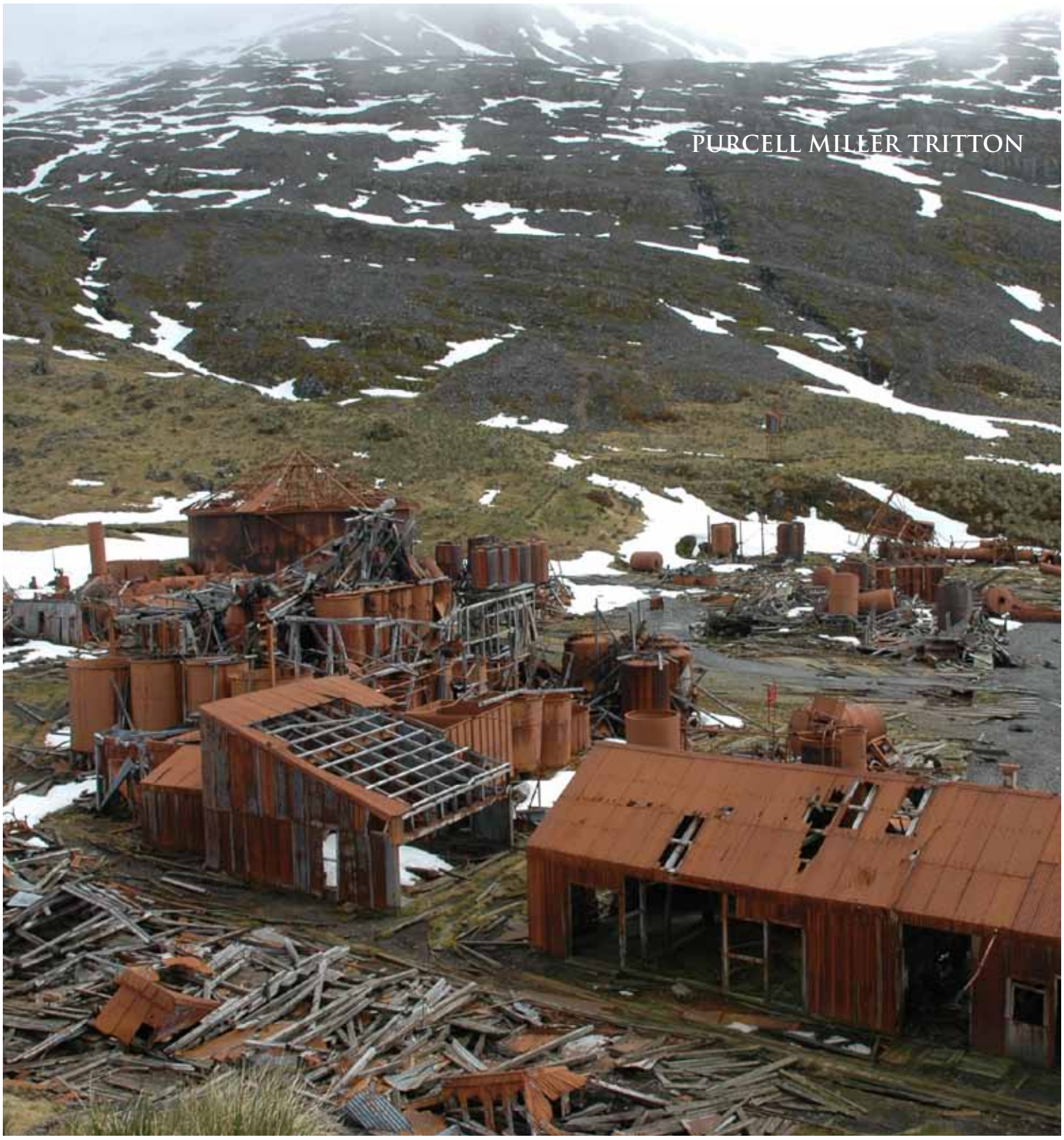

INSPECTION OF THE DISUSED SHORE-BASED WHALING STATIONS

for

The Government of South Georgia and the South Sandwich Islands

Purcell Miller Tritton LLP, 3 Colegate, Norwich, Norfolk NR3 1BN
norwich@purcellmillertritton.com www.purcellmillertritton.com
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Executive Summary

This report is made following visits to the five sites – Grytviken, Husvik, Leith, Prince Olav Harbour and Stromness in October and November 2010. This report should be read in conjunction with the report prepared by Thames Laboratories into the asbestos contamination and also the gazetteers for each site which provide additional photographic material on the buildings.

The stations were all inspected in the company of Tommy Moore of Thames Laboratories, Pat Lurcock the Government Officer and Dave Peck. Two days were spent at Leith and three at Grytviken with one day at each of the other three sites. The inspections were necessarily perfunctory with only a general appreciation of the condition of the structures.

The condition of the buildings at all the sites (except Grytviken) is poor with ongoing loss of cladding from steel framed buildings and partial, or total, collapse of many of the timber structures. Asbestos continues to be a hazard with significant concentrations in areas like the boiler houses and the processing plant. However, a more immediate danger is the loose and flapping sheets of corrugated iron which are likely to travel considerable distances in windy conditions.

The general conclusion of the inspections is that these sites remain dangerous places and that the 200 metre exclusion zone should remain in place. The best chance of conserving one of the stations was probably at Grytviken and for understandable reasons (cost, timescale, safety of personnel at the Museum and King Edward Point) the approach taken here was radical rather than conservation based.

The remaining sites present a challenge in conservation terms, which appears to be insuperable. The structures have to a great extent collapsed onto asbestos contamination. Conservation work would have to be undertaken by workers in protective clothing and removing the contamination would require many buildings to be completely dismantled. The cost and the logistic problems would be formidable.

Apart from continuing to enforce the exclusion zone to the general visitor there are a series of other, more constructive suggestions. These may be summarised as:

- No further removal of material from the sites (except under exceptional circumstances) which should be left to decay naturally (other than Grytviken).
- That specific training is provided either to Government Officers or some other appropriate people to allow them to guide parties around the sites when weather conditions permit. On calm days there is little danger of walking around the sites provided the asbestos is left undisturbed and visitors stay well away from hazardous structures. With adequate understanding and supervision this should be possible.
- That funding be concentrated on detailed recording of the sites and improving educational material. This should include an expanded website.
- The long-term maintenance of the remains of the Grytviken Station should be addressed and a properly funded maintenance plan be put in place.

- The exclusion zone should be redrawn to give more general access to the villa at Husvik and to the graveyards at Husvik, Stromness and Leith (this may require some further asbestos removal – specifically from the Husvik Villa).

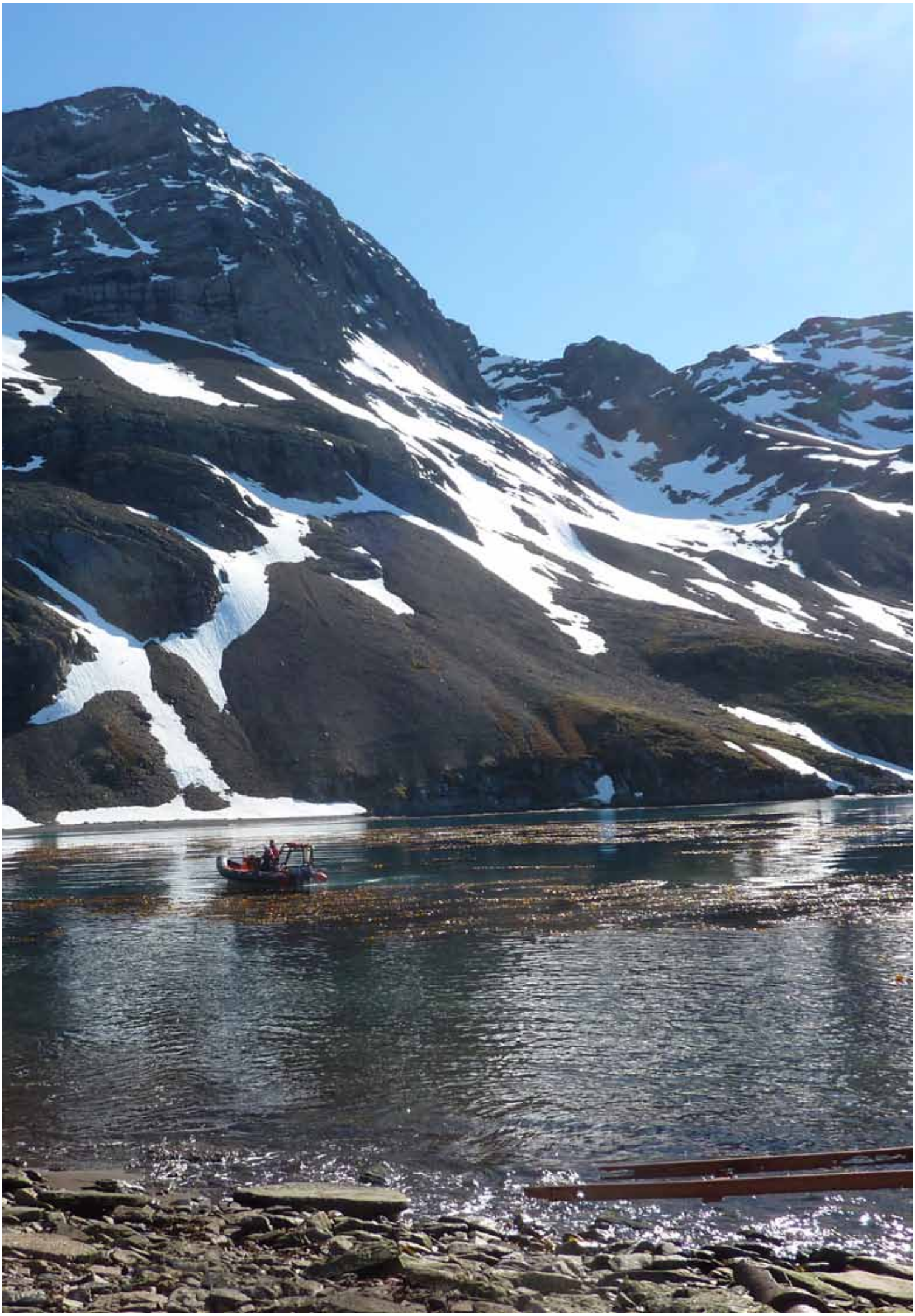
Finally it is suggested that as this is largely 'Norwegian Heritage' the approach to the ongoing recording and management of the site be agreed with appropriate interested parties in Norway.

Acknowledgements

Many people have helped with the preparation of this report, both physically and with advice. In particular thanks are offered to Tommy Moore of Thames Labs for advice on what to do and what not to do in the asbestos filled stations; Pat Lurcock and Dave Peck for accompanying us on the visits to the stations and being a mine of information about their recent history; Chris Butters, Master of the Pharos, and all his crew for looking after us so well and for ferrying us ashore at all the stations with enormous packed lunches. To Tony Hall, manager of the South Georgia Museum and his staff, in particular Lynsey Easton for allowing me access to the archive files in the Museum. Many thanks also to Sarah Lurcock for having an unexpected house guest landed on her and to Kieran and Ruth Frazer and all the BAS base personnel for all their hospitality.

The photographs of the 2003/04 clean-up campaign were provided by Dave Peck.

The photographs from the 1920s are from a collection held by the Hvalfangstmuseet at Sandefjord used in this document with their permission.



1.0 Background

The purpose of the survey was to make an assessment of the condition of the whaling stations, to reconsider their cultural heritage value and to provide some guidance for their management in the future. The request was also to consider whether there were any specific items of high cultural heritage significance that, on grounds of vulnerability and/or rarity value should be removed from the stations for conservation elsewhere. Five disused whaling stations were visited:

Grytviken	-	Friday 29th October and again on 5th, 6th and 7th November
Husvik	-	Saturday 30th October
Stromness	-	Sunday 31st October and again on Thursday 4th November
Leith	-	Monday and Tuesday 1st and 2nd November
Prince Olav	-	Wednesday 3rd November

The chance to carry out the survey arose as the GSGSSI had decided that the condition and extent of the asbestos contamination at each of the five disused station should be assessed (or reassessed) with a view to determining the extent of the contamination, the scope and cost of the work that will be involved in any clean up of the contamination and whether the 200 metre exclusion zone, which is enforced by law around all the stations, is adequate or could be reduced or should be extended. Tommy Moore, a surveyor from Thames Laboratories, with the assistance of Dave Peck carried out visual inspections, took samples and completed air tests at all the stations. As the *Pharos* was necessary to put the asbestos survey team ashore the opportunity was there for the cultural heritage survey to be carried out by Michael Morrison assisted by Government Officer Pat Lurcock.

Boiler House at Stromness typical of the spaces contaminated with asbestos

The fact that the stations have been contaminated with asbestos has been known for some time. Looking at the records in SPRI there are a whole sequence of inspections. These were initially concerned with the fuel leaking out of the storage tanks starting with a survey by British Antarctic Survey personnel in 1972 and leading eventually to the clean-up operation by Christian Salvesen in 1990-91.

The first mention of the asbestos appears to be in the 1989 survey report. This led on to a survey by 'Poles Apart' in 1998 which looked at all five whaling stations. The stated object of this survey was:

> *"The Government of South Georgia and the South Sandwich Islands wished to obtain an assessment of the environmental and health and safety hazards presented by the stations ……The survey will allow options to be considered for managing any risk."*

The survey did identify the extent of the asbestos and as a result of this an exclusion zone had been put in place around the various stations to prevent visitors from walking through the hazardous areas.

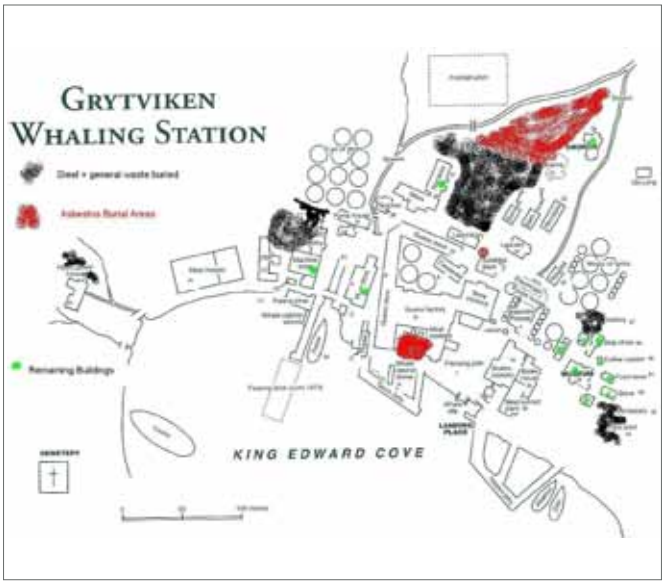
Concerns were raised by the British Antarctic Survey staff over the possibility of asbestos contamination blowing over from Grytviken to the buildings used by BAS and Government Staff. This resulted in a major clean-up operation at Grytviken in summer of 2003/04 completed by the contractors Morrison Falkland Islands using a Chilean specialist asbestos removal company with monitoring work being carried out by Thames Laboratories. The scope of the work was drastic with the majority of the buildings and many of the secondary structures on the site being demolished. Timber was burnt and the asbestos and items coated with asbestos were buried in pits that were excavated for the purpose. The scope of the work was seen as being drastic at the time. Concern was expressed, for example, by the Norwegian Government over the scope of the work and a report on the 'Industrial Heritage' was prepared by Bjørn Basberg, Stig-Tore Lunde and Gustav Rossness which noted:

> *"Comprehensive demolition of the buildings and production equipment will degrade the remainder of the historical monument to a sort of open air museum with individual items of production equipment preserved for exhibition scattered over the site."*

To a large extent this is what has happened at Grytviken. The site here has lost the richness that is made up of the complexity of a mass of individual items contributing to the whole atmosphere of the place. The site has a sanitized feel and it is difficult to visualize what it was like in operation. However, visitors are once more allowed to walk around the site and they can move freely between the Museum, the Church and the Cemetery walking amongst the remains of the

View over Grytviken (looking north) in 2003. Some demolition has already taken place (the cold store in the foreground for example).

old production plant. There is still asbestos present on the site in some of the gaskets and in more serious concentrations in the surviving ships, but this is now manageable and the areas in question can (for the time being) be adequately encapsulated to allow safe use of the whole site area. Even this clean-up operation, which concentrated on removal of the asbestos at the expense of the structures, was enormously expensive at some £4,000,000. To set this in context the revenue of the GSGSSI is approximately £4,000,000 per annum at present with £2,500,000 from fishing licenses, £800,000 from landing fees and a payment of £500,000 from the FCO towards the cost of running the base at King Edward Point. The income just about covers the costs of the Government Officers, the fisheries patrol vessel (MV Pharos – much the most expensive part of the operation), the provision of scientific observers on all the fishing vessels and the running of the base on KEP. The result is one of the best managed fisheries in the world – but a Government that has a fully committed budget with no annual surplus.



Map showing the location of the buried asbestos and the buried general waste

The brief for this survey was to make an assessment of the cultural heritage significance of the whaling station sites, to give some guidance on the range of possible conservation measures that could be adopted for the sites and to consider whether there are any items of outstanding importance that might beneficially be removed to other sites for safe keeping. The surveys were carried out in a short space of time, a single day at Husvik and Prince Olav Harbour, a day and a half at Stromness and two full days at Leith. Slightly more time, three full days, were available at Grytviken – though there was, of course, substantially less to see. However, a useful day was spent in the Museum looking at the archive. In the short time available it was impossible to do much more than have a cursory look at each building. The sites have been surveyed in a good deal more detail in the past and when the buildings were in better condition. Bjørn Basberg and his colleagues carried out surveys of all the buildings in three extended

A similar view over Grytviken in 2010

field trips between 1989 and 1997. This resulted in a detailed record of the structures and in particular of the industrial archaeology of the sites. The conclusions of the survey have been published in the book *"The Shore Whaling Stations at South Georgia: A Study in Antarctic Industrial Archaeology"*. This book has been a primary source of information. In particular the plans of the stations provided in Appendix 1 have been used to identify the buildings. The same numbering system has been used to make for simple cross referencing. There has also been an archaeological survey of Prince Olav Harbour and Ocean Harbour carried out in 2009/10 under the leadership of Dag Avango. This was one of the International Polar Year LASHIPA (Large Scale Historical Exploitation in Polar Areas) projects.

To give a clear picture of how these sites and individual buildings have fared over the past decade a Gazetteer has been prepared for each site which includes photographs of all the main structures and brief notes on their current condition. This report should be read in conjunction with the gazetteers. The gazetteers attempt to give a quick visual appraisal of each structure. Inevitably there are more photographs than can be included in the gazetteer. A set of photographs on DVD has been deposited with the Government of South Georgia.

Reference is made throughout the report and in the gazetteers to the physical condition of the buildings and to the presence of asbestos. The remarks on the asbestos should be seen in the light of the report being prepared by Thames Laboratories and, should there be any apparent discrepancies between the reports then the conclusions of Thames Laboratories should take precedence. The report is not a condition survey. The report has been prepared after rapid visual inspections of the sites. In many cases access was very limited due to collapsed structures and the presence of loose asbestos. No testing of any description was carried out by Michael Morrison.

The inspections were all made in excellent weather conditions with very little rain and hardly any wind. This did make a close inspection much more possible than if had it been windy. The primary danger in and around these sites at present is probably the amount of loose corrugated iron sheeting. Much of the cladding to walls and roofs has already blown off but there is still a good deal which is loose and flapping. In a high wind it is quite possible for complete sheets to be torn off and to blow considerable distances in the wind. It is strongly recommended that no work be carried out in these areas in high wind conditions.

Demolition of the Boiler House in 2003

The guano plant building in 2003

The machinery inside the Guano Plant now out in the open in 2010

Warning sign on the 200 metre perimeter

2.0 Ownership of the Island and the Whaling Stations

2.1 The General Situation

Captain James Cook landed in Possession Bay in 1775 and claimed South Georgia for King George III. Sovereignty was claimed over the South Sandwich Islands in 1908 when the United Kingdom annexed both South Georgia and the South Sandwich Islands. The territory of 'South Georgia and the South Sandwich Islands' was formed in 1985 after the Falklands Island War. Previous to this the territories had been governed as part of the Falkland Island Dependencies. The present Government of South Georgia and The South Sandwich Islands (GSGSSI) has an executive which is based in Port Stanley and has a permanent staff, based in South Georgia, of three Government Officers. The Commissioner of South Georgia and the South Sandwich Islands is also the Governor of the Falkland Islands and he is based in Port Stanley. All day to day government decisions will be taken by the CEO of the GSGSSI (currently Martin Collins) but significant decisions will all be reviewed by the Commissioner (currently Nigel Haywood CVO, who took up his post on 16th October 2010). Significant political decisions will be referred to the Polar Regions Unit of the Foreign and Commonwealth Office.

There are no permanent residents on South Georgia. The closest to permanent residents are the three Government Officers and their wives based at King Edward Point (KEP) who operate rotating postings with eight months at South Georgia and four months off. There is also a permanently manned British Antarctic Survey (BAS) base at KEP and a smaller one at Bird Island. Most of the BAS scientists and support staff are on one year contracts. The overwintering population is around 16 (4 Government staff, 8 BAS staff at KEP and 4 BAS staff at Bird Island). The BAS base staff at KEP provide support for the Government Officers operating the harbour fisheries inspection vessels and also provide medical cover. In the summer the population grows quite considerably with additional scientists working at KEP and in the field, some half dozen staff (more at times) from the South Georgia Heritage Trust who run the Museum as well as various contractors. The island plays host to a large number of visitors. The main fishing season for Toothfish (much the most valuable fishery) is in the winter months and all fishing boats will call at Grytviken Harbour for inspection by Government Officers. In the summer months there are up to 8,000 visitor annually the vast majority from cruise ships and a small number from private yachts. All the visitors will pass through Grytviken and are likely to visit the church, the Museum, the post office and the cemetery that contains Shackleton's grave.

The stone on Shackleton's Grave, a much visited spot

The Government and British Antarctic Survey buildings on King Edward Point. Grytviken is across the bay in the background.

Argentina has laid claim to both South Georgia (in 1927) and the South Sandwich Islands (in 1938). The Argentine claim over South Georgia contributed to the 1982 Falklands War, during which Argentine forces briefly occupied part of the Island. Argentina continues to claim sovereignty over South Georgia and the South Sandwich Islands.

2.2 The Whaling Stations

The first whaling station was set up in 1904 at Grytviken by C.A. Larsen on behalf of the company *Sociedad Anonima Compañía Argentina de Pesca* (Pesca for short). Larsen had been the Captain of the ill-fated *Antarctic* which had landed Nordenskjold's expedition at Snow Hill in 1902 and had then been lost attempting to rescue them the following year. Larsen when Master of the *Antarctic* had visited Grytviken and had seen the potential for making use of the very fine harbour as a shore-based whaling station.

After the successful rescue of the Swedish South Polar Expedition by the ship *Uruguay* Larsen was in Buenos Aries and formed a company in February 1904 '*Compañía Argentina de Pesca*' with the capital for the venture raised in Buenos Aries.

Larsen returned to Norway in the spring of 1904 and ordered the necessary equipment and procured three ships and three pre-fabricated wooden houses. The staff for the enterprise were all recruited in Norway and they arrived at Grytviken (via Buenos Aries) on 16 November 1904. After some frantic building the first whale was landed on 22 December 1904.

Larsen had set up the factory and accommodation with no reference to the British Authorities – a situation that was eventually regularised by the granting of a lease to the company in January 1906.

Other companies followed on in quick succession. The Sandefjord Whaling Company established itself at Stromness and the Tonsberg Company at Husvik within days of one another in December 1907. Initially these were simply sites for floating factories but shore-based stations were established at Husvik in 1910 and at Stromness in 1912. A lease was granted for a station at Ocean Harbour in October 1909 to the Ocean Whaling Company of Larvik, Norway. This was the first lease that insisted on the utilisation of the whole whale carcass – the practice prior to this being to take only the blubber discarding the rest of the carcass.

In November 1909 Christian Salvesen, a British Company based in Leith, Scotland, was granted a lease and formed a station at Leith Harbour. The last lease to

be granted for a shore-based station was in July 1911 to the Southern Whaling and Sealing Company who had offices in South Africa and in the United Kingdom. Whilst some of the companies involved in the whaling industry may have been Argentinean, British or South African, the majority of the labour force at each of the stations appears to have been Norwegian throughout the whole period of the whaling on South Georgia. In his book *"Of Whales and Men"* R B Robertson describes how the first stage of the journey from Leith in to Tonsberg to pick up the Norwegian contingent of the crew. The heritage of the whaling stations is as much (or more) Norwegian as British. Robert Headland states in his book "*The Island of South Georgia*" that almost 80% of the men employed at the shore-based stations came from towns in the Vestfold province of Norway.

The whaling continued unabated through the First World War – indeed the whale oil containing glycerine was a vital part of the explosive needed for munitions. There is a letter in the Scott Polar Archive (*SPRIMS 1228/3/1*) from G Grindley writing from No.10 Downing Street to Dr S F Harmer at the British Museum which notes:

> *"The urgency of the demand for the better qualities of whale oil for munitions purposes has unfortunately made it necessary to relax the regulations for the prevention of waste……".*

The first significant interruption of the industry on South Georgia came in the early 1930s. The great increase in the pelagic whaling fleet and the general world depression lead to an over-supply of whale oil and the price dropped by two thirds. All the shore-based stations other than Grytviken were closed for the 1932/33 season. Leith reopened for the 1933/34 season and these two stations (Grytviken and Leith) continued production up until 1940/41 when the whale catchers of the Christian Salvesen fleet were requisitioned for war service and Leith once again closed leaving Grytviken as the only station operating for the remainder of the war. Leith and Husvik reopened after the war and Stromness was opened not for whale processing but as a ship repair yard for Leith, the lease of Stromness having been acquired by Christian Salvesen.

Husvik finally closed after the 1959/60 season, Leith after the 1960/61 season and Grytviken closed after the 1961/62 season. Headland gives the reason for the greater success of Grytviken as the use that was made of Elephant seals to keep production going and Leith was used as a forward base for the pelagic factory ships. The final use of the shore-based stations was made by a consortium of three Japanese companies who took out sub-leases for Grytviken and Leith from 1963. The last use of Grytviken was on 4th December 1964 and Leith ceased to be used on 15th December 1965. Caretakers remained at Leith until January 1966 and at Grytviken until 1971.

A whale on the flensing platform at Grytviken in the 1920s. The Meat Cookery behind to the left and the Bone Cookery to the right.
(© Grytviken Seen Through A Camera Lens, Institut Minos)

One of the many hundreds of boxes for whale meat still in the store at Stromness

As previously noted the state of the whaling stations and the possibility of a serious pollution incident has been a concern since the stations closed. In 1972 the survey conducted by the British Antarctic Survey was concerned with the fuel remaining in the tanks. There were further surveys in 1986, 87 and 89. In 1989 Salvesen, who had acquired the leases of Husvik and Grytviken in 1979, carried out a reconnaissance expedition to determine the extent of the clean-up operation needed. This 1989 reconnaissance led to a clean-up operation over the 1990/91 season. The clean-up tasks are listed as:

i. Disposal of substantially all oil by removal or burning off
ii. Spot welding of pipes to seal off any contaminated with oil
iii. Completion of clean-up of oil spills near the tanks and pumps at Grytviken
iv. Completion of clean-up of oil spills incurred during the clean-up operations
v. Removal of all lead acid or any cell batteries
vi. Disposal of loose (not insitu) asbestos and glass fibre material by removal from South Georgia
vii. Disposal of paints, pigments, insecticide and re-agents by removal from South Georgia
viii. Clearance of any litter created during the clean-up

To achieve this there were two clean-up campaigns staged by Salvesen. The first from February to May 1990 was at Grytviken. This was followed the next year by campaigns from January to May 1991 at Husvik, Leith, Stromness and Prince Olav. To verify that the work had been satisfactorily completed inspections were made by Nigel Bonner in January/February 1991 and by Robert Headland in April 1991. In a report of May 1991 Bonner certifies that on the basis of his observations and those of Headland that the work detailed in the Terms of Reference had been satisfactorily completed.

It is understood that on the basis of this the leases on the whaling station site were surrendered on 27 February 1992 to the South Georgia Government and that there is no further liability on Salvesen (or any of the predecessors on the sites) for the building and structures or for any remaining pollution on the sites.

The presence of the British Antarctic Survey on the island was interrupted in 1982 by the Argentinean invasion when the BAS personnel were arrested. Following the retaking of the island a military garrison was established which remained in place until 2001, when BAS once again started manning the station at King Edward Point. In 1989 a desk-based study was carried out to determine the feasibility of BAS resuming its role on the island. The survey was conducted by David Rootes of 'Poles Apart'. This noted that all the buildings at Grytviken were in poor condition and that the buildings around the Plan, the Theatre and Library had partially collapsed. There were also three exploratory visits by Nigel Bonner on behalf of the South Georgian Whaling Museum between 1991 and 1994 which resulted in the setting up of the Museum in the Manager's House.

In 1997 Ben Hodges, a summer assistant at the Whaling Museum, conducted some sampling of asbestos and identified that it was present in lagging to pipes and boilers in the Glue Water Plant and also in pipe lagging in the Museum and in Riverside Barracks. A further survey was carried out in 1998 by T Eggeling, the environmental planning officer for the Falkland Islands. This report was confidential and only presented to the Government of South Georgia and the South Sandwich Islands.

In the same year the firm 'Poles Apart' was commissioned to carry out a survey with fieldwork in December 1998 and a detailed survey report in May 1999. This report looked at all five stations (Husvik, Leith, Stromness, Prince Olav and Grytviken). The terms of reference are set out as:

> *"GSGSSI wished to obtain an assessment of the environmental and health and safety hazards presented by the stations…..The survey will allow options to be considered for managing any risk."*

In the summary of their report Poles Apart concluded that:

> *"All the stations may be regarded as presenting significant health and safety risks from structural hazards and hazardous materials including asbestos".*

Four specific recommendations were made to the Government to manage the risks at the stations. These were that:

- Access should be immediately prohibited to the Meat Cookery at Grytviken due to the high risk of poorly contained Amosite asbestos.

- Access should be immediately prohibited to the Bone Cookery and the Vacuum Evaporation Plant due to the high risk presented by the structural hazards and poorly contained loose asbestos.

- Further investigations should be conducted into the amount of oil remaining in *Petrel*, *Albatros* and *Dias*.

- An appropriate oil spill response kit and contingency plan should be developed for *Petrel* and other whale catchers.

This report considered the environmental risks posed by the contents of the fuel tanks and other chemicals. The Health and Safety hazards were considered under the headings of asbestos and structural hazards. Rather disconcertingly in the light of the subsequent clean-up the report notes that:

> *"Grytviken……..may be generally regarded as the whaling station in the best remaining condition".*

The conclusions of this report with regard to Health and Safety were that the greatest risks were posed to the semi-permanent members of staff (of both BAS and GSGSSI) at King Edward Point and to the staff of the Whaling Museum (and at the time of the report the military personnel). The hazards identified were the asbestos and the risk of injury from collapsing structures and windblown debris. Various management possibilities were considered with the recommendation that the most appropriate course of action was restricted closure and limited remedial action. This is described as:

> *"Establishing a system that prohibits access to the stations of Husvik, Stromness, Leith and Prince Olav within the limits of the structures themselves and allowing suitable allowance (sic) for the areas affected by windblown debris.*
>
> *Grytviken…..would require the implementation of a remedial programme that reduces the risks currently presented by asbestos, collapsing structures and tanks containing hazardous materials….."*

The May 1999 report seems to have led on directly both to the 200 metre exclusion zone which is now in force around all the stations other than Grytviken and to the clean-up operation at Grytviken itself.

The environmental clean-up was carried out over the 2003/04 summer season. The work was carried out by AWG CS Ltd (UK) Falklands office (formerly known as Morrison Construction). The work crew arrived in September 2003 to erect temporary accommodation and work started in October 2003 with some sixty workers (19 demolition workers, 23 asbestos workers and 18 salvage crew) (*Reference Hvalfangstmuseet website*).

The demolition of the Blubber Cookery in progress in 2003

A view across the site in 2003/04. The Boiler House and Blubber Cookery are already demolished but work has not yet started on the Meat Cookery and Guano Plant.

The programme had been preceded by a visit from Professor Bjørn Basberg who had carried out the Industrial Archaeological surveys at the stations during three field trips in the 1990s initially under the Norwegian Antarctic Research Expedition 1989/90 and subsequently financed by the Norwegian Antarctic Research Programme.

Professor Basberg was invited to join the then Commissioner, Howard Pearce, in February 2004 by which time the demolition would have been nearing completion. In his earlier report on Grytviken Professor Basberg had said:

> *"Comprehensive demolition of the buildings and production equipment will degrade the remainder of the historical monument to a sort of open air museum with individual items of production equipment preserved for exhibition scattered over the site".*

This is a fairly accurate statement of what actually took place. To see the site in its present condition if one has previously seen photography of it pre-2003 is a considerable shock. It is indeed a relatively sterile area. It is, of course, always difficult to make judgements in retrospect. Perhaps this was the only viable option. However, looking at the record photographs of the site prior to the clean-up the conclusions of the 'Poles Apart' report – that Grytviken was in better condition than any of the other stations – would appear to have been correct. Obviously more collapse and deterioration has occurred at the other stations since 2003 but looking at them now there would seem to be little option but to follow the Grytviken model as the buildings are, in many places, collapsed on top of the asbestos contamination. At Grytviken, though it would have been a larger and more expensive job, there was perhaps a more realistic chance of removing the asbestos without the demolition of the buildings.

The clean-up that was completed in 2003/04, even in this drastic form, was a very expensive operation (some £4,000,000) and could only be afforded by GSGSSI as a result of some exceptionally profitable fishing seasons. To have done the clean-up in any more conservation-minded way would have been far more expensive still and a good deal more protracted.

The demolition and clean-up work was a miserable business. The workers were obliged to wear full protective gear against the asbestos and the more contaminated structures were continuously soaked with water as the demolition and clean-up proceeded – a very wet and nasty job (*personal communication T Moore one of the asbestos operatives on the site*).

Professor Basberg goes on to say:

> *"It would seem important to focus on an information plan for the area in order to preserve the facilities ability to tell its own history regardless of which project solution is selected. One challenge will be to strengthen the Museum activity on South Georgia both as regards the collection and storage of artefacts and in informing about the history of Grytviken*

This does seem to represent the best hope for the future of the remaining stations where the problems of collapsing structure and asbestos contamination are now critical.

3.0 The Condition of the Individual Whaling Stations

3.1 General

The descriptions given below are intended to give a brief overview of each of the Stations. It is not intended to give a picture of each building on each station – rather an overview of the condition of the site at the time of inspection. For a more detailed description and photographs of the individual buildings and structures the Gazetteers should be consulted.

These sites have been altered to a great degree since they were set up. Obviously the number of buildings has increased but many – perhaps most – of the buildings have been added to and adapted. One of the most common adaptations is the addition of an enclosed passage on the side of a single storey accommodation hut where the doors would have originally opened direct to the outside. Several of the accommodation buildings appear to have started out as a single storey and have had an upper floor added. The mess buildings and kitchens have been extended and the factory units themselves have been extended and added to as the scale of production increased and as the nature of the processing plant changed.

General view over Prince Olav Harbour looking south

It is also notable how many fires there were in the buildings. A brief look in the archive file at SPRI (*SPRIMS 1228/21/1*) gives a list of the more serious fires that resulted in extensive damage:

22nd October 1912 – the total destruction of the warehouse and iron foundry at Grytviken

2nd March 1916 – the complete destruction of the Blacksmith's Shop at Grytviken

9th October 1919 – total destruction of the Men's Quarters at Prince Olav's Harbour

1st February 1920 – the burning down of the Bone Cookery at Prince Olav's Harbour. The Magistrates report notes "*The woodwork around the pressure cookers took fire owing to overheating. This is a common occurrence in whaling factories, but unfortunately it happened when there was no-one present to raise the alarm*."

1st September 1920 – two Barracks burnt down completely and the greater part of the kitchen destroyed at Stromness.

12th March 1922 – the building containing 24 pressure cookers, 8 coal wagons and 3 winches burnt to the ground in Leith Harbour.

1st February 1923 – the Bone Cookery completely destroyed at Stromness with the loss of 58 pressure boilers.

23rd October 1923 – the Carpenters Shop and Bone Cookery Boiler House destroyed at Leith.

11th May 1934 – part of the Boiler House destroyed at Stromness.

24th May 1934 – Barracks A completely destroyed at Leith.

22nd December 1934 – the Meat Factory and Boiler House completely destroyed at Grytviken.

25th December 1937 – fire in the Animal House at Grytviken – building destroyed.

29th January 1947 – the Guano Storage Shed at Grytviken completely destroyed along with the loss of some 3,800 tonnes of guano.

9th February 1947 – the roof of the Guano Factory damaged.

26th July 1952 – fire in the Hospital at Leith *'caused considerable damage'.*

8th October 1954 – considerable damage to the Cow House and Piggery at Grytviken.

23rd November 1956 – destruction of the Barrack Block B at Leith.

These are the fires that were sufficiently noteworthy for the Magistrate to have filed a report. Presumably there were many more minor incidents. The scale of the destruction and the evidence of alteration and extension of the buildings does indicate that these are not pristine sites which are evidence of some particular period – rather they are, as at most industrial sites, evidence of continuous change and adaption. There is very little here that can be dignified by the term 'architecture' – however, the adaption and alteration makes them all the more interesting in terms of the changing needs of the industrial processes and the accommodation needed for the workers. The interest also lies in the fact that they were abandoned at relatively short notice and with the expectation that they might be reopened. This meant that the sites were left relatively intact with only the most portable or valuable things withdrawn. All the heavy machinery was left in position together with tools and furniture.

The remoteness of South Georgia has meant that there has been no real attempt to salvage any heavy equipment or indeed to reclaim the buildings and equipment and stores for their scrap value. There has been the beginning of the salvage operation at Leith by the Argentine scrap merchant 1982 that was one of the events that precipitated the Falkland's war. This resulted in some minor damage to the buildings to allow equipment to be removed and a piling up on the quayside of a variety of the more valuable bits of scrap metal and machinery. Nothing actually appears to have been removed for the site. There has also been a fair amount of petty looting by the military personnel and casual visitors – however a great deal of plant, equipment, tools, stores and furniture remain at each of the sites.

The numbers and the building names given below are all taken from the plans in the appendices of the book '*The Shore Whaling Stations of South Georgia*' by Bjørn Basberg.

3.2 Grytviken

Grytviken is, of course, much the best known of the sites. It is the port of entry for South Georgia which all visitors are obliged to report to – so every visitor to the island be they fisherman, scientist, yachtsman or tourist will come to Grytviken. It is also now the only old whaling station that it is permissible to visit - the only one to have had a thorough environmental clean-up and the only one without the 200 metre exclusion zone.

The scrap site up at Leith in 1982 ready for removal

Grytviken today, general view looking south

3.2.1 The Remaining Buildings

Apart from the group of seven small buildings around the Museum there are only four building still standing at Grytviken, No 10 the Main Store, No 11 the Engineering Workshop, No 27 Nybrakka and No 34 the Church. All of these are solid enough at present. A series of minor repairs are needed in the church but none of any great moment. The Engineering Workshop would benefit from some better repair and maintenance work to make good the scars after the removal of the Blacksmith's Shop. Both the Engineering Workshop and the Main Store have had their corrugated iron sheeting to walls and roof repaired with pressed metal sheet which has a rectangular rather than a curved profile. The windows have also been covered over with this material. It would be good to hold a stock of corrugated iron in the correct profiles for future repairs and, in due course, to replace these temporary repairs. It would also be good, if these buildings are going to be regularly used, to have at least some of the shutters demountable to allow some natural light into these areas. The main store does have some possibilities as a display space. It is well racked out and whilst there has no doubt been a good deal pilfered over the years enough remains to make a good display. This might, potentially, be an area that could receive any appropriate objects salvaged from the other sites.

The vast bulk of the buildings have been entirely demolished and all the material from them cleared away. It is understood that the timber was generally burnt and the corrugated iron and the asbestos was buried in pits. What remains are the concrete bases where the buildings stood, often with concrete up-stand walls for the footings for the wall framing. The steel framework supporting the larger elements of the plant in the main buildings remains so the cookery buildings still have framing and substantial amounts of plant remaining in position but all the more domestic building have been entirely removed.

The two buildings that are the main focus of attention for most visitors are the Old Managers Villa – now the Museum and the Church

The use of modern wrongly profiled sheet to repair the Main Store east wall

The remnant of the Laundry in the foreground and the Glue Water Plant behind

3.2.2 The Museum and the Buildings Around It

This is now the primary group of buildings at Grytviken. On the Basberg Plan they are numbered as follows:

36. The Managers Villa – now used as the Museum, shop, offices and store
37. The Foremen's Barracks – in the process of being converted for accommodation.
39. A new building being used as gallery, post office, offices and public lavatories
41. Provisions Store No 3 – being used as general storage for the museum
42. Potato Store – also being used as general storage for the museum
45. Coffee Roasting House – used as a waste store for the Museum
46. Slop Chest – used as the workshop and material store for the Museum

These buildings were not inspected in any detail. They are clearly all in beneficial use and are all being maintained. The Manager's Villa and the Foreman's barracks have both had new roof coverings and new windows. External wall surfaces have been repaired and repainted. The Managers Villa has been altered to a degree to accommodate the Museum – the front entrance doors have been turned through 90° for example – but generally the internal arrangements seem to have been left much as they were when it was a house. The Foremen's barracks, at the time of inspection, was in the process of being adapted to form living accommodation for the Museum Staff having previously been used as a house by the previous Museum Manager. None of this work has made any great change to the appearance or significance of the buildings – but the work has been carried out on general 'building repair' lines with perhaps less attention to careful replication of detailing than is desirable in 'heritage' buildings. The new windows, for example are reasonably close to the glazing pattern of the original windows – but do not exactly replicate it. Similarly the detailing of the joinery of the windows shows that it is a modern mass produced window and not the sort of things that would be in a historic building.

The Building (no 39) which has replaced Provision Store No 1 is a modern building of a utilitarian nature and all appears to be in good order. The other four old buildings have all had some repair work on them and all remain serviceable at present though none is in excellent condition and all will need more substantial repair work in the future.

The buildings around the Museum

3.2.3 The Church

The timber framed church was erected in 1913 and is described as a 'typical Norwegian country church'. The building is timber framed and clad externally in tonged and grooved vertical bratticed boarding and internally in tonged and grooved match boarding, both the interior and exterior being painted. The church is set at more or less 180° to conventional ecclesiastical practice with the entrance porch and doors in the east end and the sanctuary at the west end of the church.

This does have the advantage that the door is closest to the living accommodation. The church is essentially a single open space, a nave, with a sanctuary in an apse at the west end and a gallery at the east end. The only unusual feature is the provision of a separate entrance lobby and a square library building attached to the south west corner of the church. This would appear to be contemporary and built in the same construction and style as the body of the church. The church has a suspended timber floor raised some metre off the ground level at the east end but being more or less level with the external ground at the west end.

The roof construction is open with the principal rafters and purlins exposed with timber boarding, similar to that on the walls providing a ceiling on the underside of the rafters. Timber framed casement windows light the church and there are entrance doors at the east end, in the north wall (now blocked) and in the south west corner. The gallery at the east end is reached by a dog leg stair and from the gallery access is possible by ladder to a small bell chamber under the spire.

The church is generally in good order it has had a new roof covering of mineral felt held in place with timber battens and the external paintwork and boarding is all in reasonable condition. There has been a fair amount of structural intervention internally with additional timbers and steel plates bolted onto the columns supporting the gallery and spire, onto the wall posts and the principal rafters. This has been done reasonably discreetly and the new timber and steel is painted in with the interior boarding. There has been an electrical installation in the past but there is now no electrical supply. Heating was originally by a solid fuel stove which remains in position, but now unusable as it is without a flue.

Little needs to be done to the church other than routine maintenance. A number of minor points have been picked up in the longer report in the gazetteer. One which has wider application to the site is the status of the fire extinguishers. The two water filled extinguishers in the church did not appear to have been checked for many years. Presumably there is (or should be) some policy for checking and servicing extinguishers in the BAS base and Government buildings? It would seem to be desirable to have those in the other remaining buildings

The entrance porch at the east end of the church

The church today looking east. The thickening of the support posts can be seen.

at Grytviken on a similar basis (though whether it is sensible to have water filled extinguishers in a space with no heating should perhaps be questioned).

For a more detailed appreciation of the work to the church see Bob Burton's report attached to the Gazetteer.

The Library

Strengthening of the roof trusses with steel plates carried out in the last few years. The work was apparently carried out by Tim Carr, the Museum Curator.

The slenderness of the posts supporting the balcony and the tower are evident in this photograph of the 1920s. *(© Grytviken Seen Through A Camera Lens, Institut Minos)*

3.2.4 Nybrakka

Nybrakka was built as a new barrack in 1960 and remains fairly solid. The basic construction is of a timber frame, possibly with some steel members, clad externally with feather edged boarding and internally with 'woodwool' slabs which are also used to form the internal partition walls. Woodwool was a material that was in popular use in the 1950s and 60s. It is still available and indeed is making something of a comeback as it is seen as a reasonably environmentally friendly product. The slabs are made of long-fibre wood shavings compressed and bound together with cement. They are fire-resistant and have moderately good insulating properties.

The building is on four floors with a reinforced concrete semi-basement, solid ground floor and suspended timber boarded floors for the first floor and attic. The windows are currently boarded up but there has been a good deal of water coming in through the north skylights. This has resulted in rotten floor boards and joists under these areas. At present the basement has around 250mm of water standing in it. This building could be brought back into use if there is a sensible use for it. The structure seems to be solid enough but there would still be a large amount of work to be done including reroofing, improved insulation throughout, new double glazed or repaired window with new inner sashes, a complete internal refurbishment together with completely new services. This is a big building with a floor area of around 1,450 square metres and this will be very expensive to bring back into beneficial use.

3.2.5 *Dias* and *Albatros*

Dias was inspected with Dave Peck primarily to consider the possibilities for stabilizing the funnel. This inspection also allowed a reasonably close look at *Albatros*. *Petrel* was not inspected. The funnel on *Dias* had started to collapse some years ago as there is very little solid metal left in the bottom of the funnel. It has been stayed previously with wire ropes which has clearly helped to keep it in place but the corroded iron plates at the base of the funnel have now failed allowing it to drop 10 cm and to develop a significant lean. Various ways of stabilising it insitu were considered – but the conclusion was that the deck on which the funnel sits has insufficient strength and there is nothing round it with sufficient material to stabilise it. The major concern was that it could fall and potentially hurt someone as well as doing substantial damage to the boat.

There is also a large amount of asbestos in the engine room under this area and there is a good chance that if the funnel falls it could disturb and release some of this asbestos. The best chance to remove the funnel appeared to be to make use of the large Volvo excavator – which was due to depart in December 2010. For this reason it was decided to remove the chimney immediately and to store it for possible reattachment at a future date. The funnel of *Albatros* was inspected from a distance and still appeared to be sound.

Nybrakka looking westwards with the remains of the earlier mess building in the foreground

The decks and raised sections over the engine house are in poor condition on both *Dias* and *Albatros*. The decks and bulkheads around the accommodation have been patched with steel plate and for the smaller holes with mastic. This is what encapsulates the asbestos which covers much of the plant in the engine rooms on both the boats. There is also a good deal of decay on the plates of the hull. These two boats are now grounded and have water flushing through the lower part of the hulls with the tidal flow. An immediate first aid repair programme is now needed to keep the asbestos contaminated areas effectively sealed. In the longer term these (three, including *Petrel*) boats pose a substantial maintenance challenge. To maintain them in a way that gives them a long term future will need a serious commitment in both time and money.

Dias and *Albatros* prior to the 2003/04 salvage operation

Corrosion on the starboard bulwark of *Dias*

Dias in 2010 prior to the removal of the funnel

3.2.6 Ongoing Maintenance

Despite the extent of the clean-up at Grytviken there is inevitably going to be a need for ongoing maintenance at the site. There are ten buildings that will need some attention each year and the Church, The Museum, The Foreman's barracks and Nybrakka will all need painting on a regular basis. The corrugated iron cladding of walls and roofs on all the buildings will need to be re-fixed where loose and there will be the inevitable host of other minor tasks.

A maintenance plan has been prepared by Morrison Construction – this is not dated but appears to have been prepared in 2008 or 2009. This is a comprehensive document as far as the buildings at Grytviken and King Edward Point are concerned. If all the tasks that are identified are completed on the annual cycles that are suggested the buildings will indeed be well looked after. The document has something of a standard flavour to it – a maintenance plan prepared on the basis of a standard document and not specifically tuned to the conditions and constraints of South Georgia.

There are some elements in here such as the testing of electrics in spaces where there are none and the checking of the fire fighting equipment which do not appear to be relevant. There is also an assumption about the replacement of floorboards and windows that might be appropriate in a commercial building but not in one with any 'heritage' credentials. It is not clear whether this ambitious maintenance programme has been adopted and how it will be carried out and funded.

However, apart from the occupied buildings there is a need for a maintenance plan for the areas of machinery and their supporting frameworks that have been left. Is the intention just to let them rust away or is a more positive management strategy contemplated? As an absolute minimum the structure and the heavy pieces of machinery will need to be checked (preferably annually) to ensure that they remain safe. There is also the problem of the big fuel tanks which are starting to collapse and will need clearing in due course. There is also the need to manage the paths and bridges that people walk across. All this will need a substantial annual budget as well as a good deal of management time to ensure that it is adequately carried out.

Equipment such as the hydro-electric turbines and generators will need conservation and maintenance if they are to survive

3.3 Husvik Harbour

The buildings at Husvik, with the exception of the Manager's Villa (No.64) and the Radio shop (No.61) are in varying states of collapse. The stream that ran down the north side of the station has diverted it's course and now runs through the Carpenter's and Butcher's Shop (No.28) and through the Blubber Cookery (No.3) and through the corner of the Bone Cookery (No.2) before running across the Flensing Platform. This is certainly hastening the demise of these buildings.

The major buildings containing the processing plant have collapsed to a great extent. The Blubber Cookery (No.3) walls have fallen away and the platform over the cookers has started to collapse. The Bone Cookery has collapsed on top of the cookers with the area now being too dangerous to enter. The Meat Cookery has also collapsed to a large extent although it is still possible to access the west end of this space. The Guano plant has fared slightly better as it is contained in a later building with some more substantial framing, however, even here there is fracturing in roof timbers and a substantial area of missing roof. The guano store to the south of the rest of the plant is in rather better order with a substantial steel frame – but here too there are loose and missing sheets of corrugated cladding and roofing and the south end of the building has had a building demolished leaving a ragged scar.

The Separator and Glue Water Plant (No.5) was clad in corrugated asbestos and has collapsed entirely. The Boiler House (No.14) to the west of the main plant has been damaged at the north end by the falling flues and the east wall is collapsing. The domestic buildings (Nos.15 – 26) including the Bath House, Provision Store and Bakery, Office and Slop Chest, Kitchen and Mess, Cinema and Library and all the Barrack buildings are in a state of collapse either partial or complete. Nothing in the Domestic buildings remains undamaged and nothing could be made safe or usable without a complete rebuilding.

The workshop buildings have fared a little better than the Domestic Buildings. The Laboratory and Store has minor damage but is probably capable of being repaired. The Catcher Store (No.7) has holes in the roof and wet rot in the upper floor but remains a substantial building – though thoroughly revolting as Elephant seals are using this as a moulting area. The Main Workshop (No.8) has a collapsed section at the east end but the west end of the building remains sound. The Main Store and the Laundry and Slop chest are also still at a point where they could be repaired.

The small group of buildings to the north east around the *Karrakatta* are all in poor condition with damaged cladding, holes in the roof and damaged structural framing. *Karrakatta* was not accessed but appears to be sound enough sitting well out of the water on the slipway.

View of the Bone Cookery across the flensing platform at Husvik

The separator and Glue Water Plant building (No. 5) at Husvik

The remnants of the Cinema and Library (No. 24) at Husvik

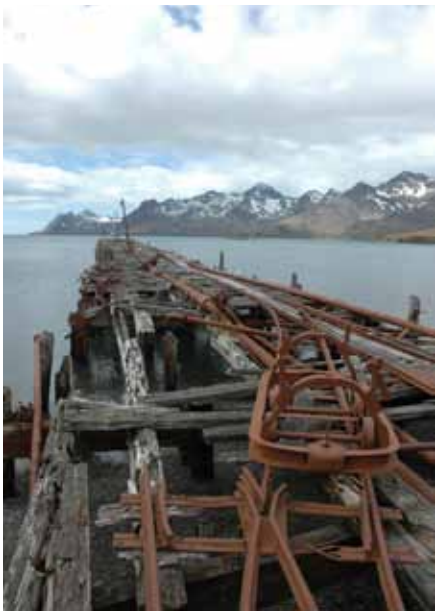
The westernpart of the Workshop building (No. 8) at Husvik

The site still has a large collection of gantries supporting pipes (for fuel, whale oil and steam) which are largely lagged with asbestos. There are also still many railway lines in position running around the storage and production areas of the site, into the buildings and out onto the jetties. These are very much a part of the character of the site – although the asbestos insulation on the pipes does provide a distributed hazard around the site. There are also a large collection of cylindrical tanks of different sizes (Nos.38-59). These are generally in reasonable order with their roofs still intact and no signs of imminent collapse. The jetties, on the other hand are in very poor order and have now reached the point where they cannot be repaired and would need to be substantially rebuilt if they were to be brought back into use.

The only two buildings that can be said to be in fair condition are the Manager's Villa (No.64) and the Radio House (No.61). Both of these have been repaired comparatively recently by volunteers who have used them as accommodation whilst completing scientific work in the area. These two buildings are currently banned from use as they are within the notional 200 metre exclusion zone. Both these buildings appear to be in a sound condition. There is some asbestos in the loft space of the Manager's Villa around the flues which needs to be removed or to be properly encapsulated. Both the Villa and the Radio House are more than 200 metres from the more heavily polluted areas of the site and perhaps with a limited clean up of the asbestos at the south end of the site it may be possible to bring these two building back into use.

The *Karrakatta*

General view of Husvik with the Manager's House and Radio House to the right of the picture well away from the main part of the station



The main jetty (No. 36) at Husvik

3.4 Stromness Harbour

The buildings at Stromness have fared slightly better than those at some of the other sites. Many of the larger buildings have substantial steel frames and are later buildings than those at some of the other stations. However, the site was not used for whaling after the 1930s and there is little trace remaining of the buildings and plant associated with the processing of the whale carcasses. The Bone Cookery (No.2) has disappeared completely other than a few brick bases and some floor. The Building of the Meat Cookery (No.3) has disappeared though some of the boilers remain perched rather precariously on collapsing brick bases. The Guano Storage buildings (No.4) remain but the actual processing plant area has collapsed. The former Blubber Cookery (No.6) has been rebuilt as a workshop and no trace of the former plant remains. In terms of understanding anything of the processes of rendering the whale carcasses there is really nothing left at Stromness. The site was used as a ship repair yard for the Leith Harbour Station and so much of the plant and the buildings is related to this activity.

The large main buildings (The two arms of the Guano Store, the Boiler House and Power station, the Workshop, the Mechanical Workshop and Plating shop) all have substantial steel frames which remain in position and in reasonably good order. All are clad in corrugated iron and all have lost sheet from the walls and the roofs with quite substantial areas missing. However, these are single storey buildings with concrete floors and so little damage has been done. The Boiler House is probably in the worst condition with large sections of the roof missing and walls damaged by the collapsing flues. This building is very heavily contaminated with asbestos.

The smaller timber framed buildings on the site are generally in very poor order. Some like the Store (No 7) Barracks No 2 (No 18), the Cinema (No 23), the Pigsty, Sheep and Hen Houses (Nos 26 and 27) have collapsed completely. Other such as the Store No 1 (No 8), the Kitchen and Messes (Nos 14 and 15) and the Officers House (No 22) are still standing but with substantial structural damage, holes in the roof and small areas of collapse.

There are really no small buildings that could be said to be in even 'fair' condition. The best of them is probably the Pump House (No 9) a small brick building and (No 24) the Bath House, though this is missing a large area of its roof sheeting.

There has been confusion at this site over the Manager's Villa that was visited by Shackleton and his companions, Worsley and Crean, after the trek over the island from King Haakon Bay in 1916. The official sign on site suggests that the building in question is the one known as the Manager's Villa (No 20). This building is a two storey timber framed house clad externally in painted weatherboarding and with a corrugated iron roof. It is in better condition that most at Stromness with the roof reasonably sound, little damage to the walls and many of the windows boarded over. It is possible to access the interior though some of the suspended ground floors have collapsed. However, it now seems certain that the Manager's house at the time was the one now known as the Foremen's Barracks and Mess (No 16). See the section to follow.

As with the other sites there is a substantial array of tanks for fuel and for storing whale oil (Nos 34 – 57). These are generally in good order with their roofs intact and sitting firmly on their bases. There is also the usual collection of gantries for pipes, railway lines, bridges, fire hydrant points and dumped equipment that makes these sites so rich.

One of the fire hydrant points around the site at Stromness

Looking south along the beach with the Elephant seals in occupation at Stromness

A view across the Flensing Platform with the Boiler House in the centre and the Old Blubber Cookery to the left at Stromness

Pipe store in the Old Blubber Cookery used as a Workshop

3.4.1 The Foremen's Barracks and Mess (Old Manager's Villa) No 16

This is the original villa where Shackleton, actually arrived. It is a two story timber house, clad externally in painted timber boarding with a pitched roof covered in corrugated iron. There is a low cellar under the whole building and a good portion of the ground floor has collapsed into this. The basic construction is of 75mm thick horizontal boarding which is clad externally with vertical boarding on battens on building paper. Internally there are vertical boards fixed directly to the thick boarding. This is a strong form of construction but it does rely on the integrity of the thick boards and the base plate they sit on. The boards have wet rot (or possibly damage from freeze thaw cycling) near the base on the west, south and east sides.

First floor bathroom in building No. 16. Possibly the bath used by Shackleton!

There are entrances on the north and east sides and access is still possible to the interior with extreme care. The whole of the ground floor to the south of the building has collapsed or is about to collapse into the cellar. The stair still remains in place and the upper floor is reasonably intact although affected by snow/ rain driving in through the open windows.

The House stands approximately 100 metres from the Boiler House (No 5) which is the most heavily polluted building on the site and so it seems to be impossible to provide any safe access for visitors to this villa without a major clean up on the site.

Any comprehensive repair to this house will be difficult and expensive and will probably require the removal of much of the lower boarding both internally and externally as well as the complete reconstruction of the ground floor. It might be possible to prolong the life of this building for a few years by some timely patching. It would be helpful to repair the roof and to cover over the windows and doors to keep the rain out of the building. It would also be good to over-clad the exposed areas of the heavy board structure to keep this as dry as possible and to fit some bracing pieces to the east wall where the first floor is tipping out around the window. However, this will only be possible if workmen are given proper training and equipment and are preferably accompanied by someone who understands the hazards of asbestos. Given the generally hazardous nature of the site it must be questionable whether it is sensible to expend a great deal of money and effort on a single building.

The Old Manager's Villa now known as Foremen's Barracks and Mess (No. 16) at Stromness

3.5 Leith Harbour

Leith Harbour is much the biggest of the stations and is now the only one where the process of whaling can be sensible understood by looking at the standing buildings. Leith has buildings in every sort of condition from total collapse to relatively minor damage that could be repaired. Many of the bigger buildings for the workshops and the processing plant are constructed with steel frames and generally the frames remain in good order – though virtually all are missing cladding sheets from the walls and from the roofs.

The main processing buildings around the Flensing Platform are all still intact. The Blubber Cookery (No 2) has damaged walls and the platform above the cookers is no longer safe to access but sufficient of the plant remains for the processes to be comprehensible. The same can be said of the Hartmann Plan and Meat Cookery (Nos 4 and 5) though this is in slightly worse condition with the north wall collapsing. The Bone Cookery and the later Rose-Down Plant (No 6) is still in reasonable order with all the plant in place and is safe enough for the upper levels to be accessed. Since the clearance of Grytviken this is the only station where the processing plant is still in position around the flensing platform together with the lifts, conveyors, slipways, winches and lofts. These building as are certainly not in good condition and they are, no doubt, heavily contaminated with asbestos. However, if one were looking for any set of processing buildings to try to repair and save these are the only sensible candidates.

The other big buildings are in varying condition. The single biggest building on the site, the Guano Factory and Store (No 10) has a steel frame in reasonable order but has lost a great deal of its roof sheeting. The separator plant (No 22) has a collapsed central section and is generally in poor order. The Power Station (No 24) has suffered a little from the salvage operations of the Argentinians in 1982 and has holes in the walls and roof but the building itself remains solid. The Boiler House (No 25) is the most heavily contaminated building on the site and has two tall steel chimneys one of which is poised ready to fall. At present, however, the steel framed building is in reasonable order. The Catcher Store (No 28 and the Plumbers Shop (Nos 28 and 30) have missing roofing and holes in the wall cladding but again the steel frames remain sound. At the north end of the site the Stewards Store (No 40) is in reasonable order , certainly capable of being repaired.

As at the other sites the timber framed domestic buildings have fared worse than the steel framed industrial buildings. Several of these have collapsed completely – Trehus barracks (No 44), Hillside Barracks (No 45), The Welfare Hut (No 46), The Mess and A Barracks (No 63) and the Cinema (No 80) are all in a ruinous state. None of the remaining 'domestic' buildings is in good order with virtually all of them missing roofing and many suffering from small areas of collapse. There are a small number that are still in a condition where they could be repaired, E Barracks (No 47), Grand Barracks (No 49), the Hospital (No 51),

General view of Leith Harbour with the Flensing Platform in the centre of the picture

The Laundry (No 65) and the Bath House (No 67) are all still capable of being repaired – but it would be an expensive business just to get them structurally sound and wind and weather tight.

As with the other untouched sites Leith is still rich in the elements that show how complex these site were. There are pipe gantries and pipe runs, fire hydrant points, winches, coal heaps, barrel dumps and to the north of the site a waste of dumped plant and material. There are also a number of remaining fuel tanks and associated pipework. The jetties here remain more intact that at the other sites – but they are still much too damaged to be safe to use without extensive rebuilding.

The Boiler House at Leith

The Bone Cookery and Rose Down Plant at Leith

A general view over the production area of Leith Harbour, looking southwards from the Old Cemetery

Trehus Barracks at Leith

A and C Barracks, Mess and Provision Store buildings (Nos. 53, 63 and 64) seen from the upper window of the Steward's Store

One of several switch rooms, this one in building No. 20 at Leith

3.6 Prince Olav Harbour

Prince Olav Harbour is in the worst state of any of the five stations that are considered in this report. This is not surprising since this station was effectively abandoned once it had been closed in 1932. There are no buildings at all at the site which are in a good state of repair. All the buildings containing the plant have collapsed. The Bone Cookery (No 5) has disappeared more or less entirely with only the concrete base remaining. The two Meat Cookeries (Nos 3 & 4) have collapsed with little sign of the building – simply rows of remaining cookers, some still standing other collapsed off their bases. The steel framed Guano Factory (No 6) still has rotary cookers in place but the steel frame of the building has collapsed and no cladding remains in place. The Winch House (No 9), the Boiler House (No 10), the Refinery and Laboratory (No 13) have all collapsed with very little remaining other than the more robust pieces of plant and some bits of steel frame. Of all the production buildings the Blubber Cookery (No 2) has the most substantial presence thanks to the steel frame supporting the cookers – but even this is partially collapsed – certainly too dangerous to casually enter.

The secondary buildings on the site have fared as badly as the production buildings. The Guano Store (No 7), the Provision Store (No 11), the Blacksmith's Shop (no 15), the Foundry (No 16), the Jetty Store (No 29) and the east Boiler House (No 30) have all collapsed completely with either a tangle of timber frame and corrugated iron or little remaining other than a concrete base. The domestic buildings are in equally poor shape. The Bath House (No 17), the Provision Store (No 24), the Old Foremen's Barracks (No 25), the New Foremen's Barracks (no 26) and the Cinema (No 34) have disappeared completely with only some concrete bases remaining in position.

The buildings that do remain standing are all in poor order. The Carpenter and Butcher's shop has lost much of its cladding and the north east wing has been undermined by the sea and is now on the point of collapse. The Old Barracks (No 18) has lost a section of the west wall and the internal floors have started to collapse. The New Barracks (No 19) is in slightly better condition but has holes in the roof and is starting to lose its cladding. The Office and Slop Chest (No 20) has collapsed with the roof, still framed up but now resting on the ground.

General view looking northwards across Prince Olav Harbour. The relatively intact building in the foreground is No. 14 - The Carpenter and Butcher's Shop.

The Lower Meat Cookery at Prince Olav Harbour

The Boiler House looking northeast at Prince Olav Harbour

The remains of the Guano Factory at Prince Olav Harbour

The Hospital Building (No. 21) at Prince Olav Harbour

The whole central section of the Hospital (No 21) has collapsed with only the east and west walls remaining. The Kitchen and Mess (No 22) looks to be in slightly better condition when viewed from a distance. A closer inspection, however, shows that this was originally a two story building that has collapsed sideways (to the north) and now is single story with the stiffness of the roof and upper floor framing holding for the time being – but likely to collapse completely in the next few years. The Bakery (No 23) has partially collapsed with the remnant of the bread oven exposed at the south end of the building. The Manager's Villa (No 27) appears to be in better condition from the outside but internally the floors have been removed from the whole of the north side of the building and the first floors is missing throughout and the building now has holes in the roof and rain blowing through the unprotected window openings.

Two brick built structures remain. A building – a store by the look and location which does not show on Basberg's plan and standing immediately west of the site of the New Foremen's Barracks - remains in position but with one wall collapsing and holes in the roof. One of the more substantial buildings remaining is the Pigsty (No 32). This has brick walls and a timber framed corrugated iron roof all of which remain in position – though the east wall is starting to fail with substantial decay to the brickwork.

Little remains of the secondary structures that are so in evidence at the other sites. With the exception of the large tank (A on the plan) the fuel and whale oil tanks have disappeared – presumably they were removed for use on other sites. There is very little evidence of gantries and pipes that must have run around the site and the railway system has entirely disappeared apart from the upper station of the Elevated Railway (No 8). The main Jetty on the south side of the bay is still present though in far to poor a condition to use. The other jetties have disappeared. The Flensing Platform (No 1) remains in position with its timbers in remarkably good condition given that a stream now runs across it discharging into the sea at the point where the whale slipway would have been located.

The Kitchen and Mess at Prince Olav Harbour - the south wall looking eastwards

The upper station of the elevated railway at Prince Olav Harbour

4.0 Asbestos, Structural Condition and Exclusion Zones

4.1 Asbestos

One of the main purposes of the survey was to allow the assessment of the amount and condition of the asbestos on these sites. This work was carried out by Thames Laboratories and this report should be read in conjunction with their more detailed technical report. If there are discrepancies between the two reports it must be assumed that the opinions expressed in the Thames Report should prevail.

Asbestos is clearly present on all the sites (other than Grytviken and King Edward Point) that were inspected. There is a large amount of it and its condition is generally very poor. It is present in large quantities in the production areas, the boiler houses and the cookeries -around boilers themselves and around pipes. The use of asbestos for pipe lagging appears to be ubiquitous and as much of this is falling away it is generally distributed around the site with clumps of it lying on the floor of buildings and outside. A good deal of the asbestos has 'skinned over' and is probably not shedding fibres at present – but will almost certainly do so if it is disturbed.

Disturbance is possible by people walking through the area, by animals moving about the site, by collapsing elements of structure and probably in some circumstances simply by the weather. The loose asbestos is undoubtedly a serious long term risk factor and is likely to mean that unless there is a major environmental cleanup it will not be completely safe for anyone to access these facilities for many years – probably decades – to come.

The Boiler House at Stromness, one of many heavily polluted areas

Asbestos being buried at Grytviken in the 2003/04 clean-up campaign

The possibility of removing the asbestos was discussed on site. Removal was the procedure followed at Grytviken, and, as at that site, removal will be an expensive, unpleasant and difficult business. A major complication is the structural condition of the production buildings. This is very poor on all the sites and to remove the asbestos demolition and asbestos removal will need to operate simultaneously. The workforce would need to operate in protective equipment making the work more difficult and unpleasant. Assuming that it were possible to finance such an operation (in itself something that must be doubtful) the end result on the sites would be something like Grytviken with isolated pieces of plant remaining.

At Leith and Stromness there are sufficiently robust structures for some buildings to be retained. At Husvik the end result might be more like Grytviken with the tanks, the Radio House, a few other minor structures and Manager's Villa remaining alongside the remnants of the plant. But at Prince Olav Harbour it is difficult to see how anything meaningful could be left after a clean up without a very substantial element of reconstruction.

Given this it is difficult to see how to justify the removal of the asbestos in 'conservation' terms, at least as far as the conservation of the cultural heritage significance of these buildings is concerned; the process of removing the asbestos effectively destroying much of the heritage significance of the sites. There will, inevitably, be other factors to consider and it may well be that considerations of safety and environmental concerns will point to the need for a 'clean-up' operation at some point.

4.2 Structural Condition

The asbestos undoubtedly is a major risk factor at these sites. However, if entered with care by suitably experienced personnel the risk is probably minimal provide the asbestos is left undisturbed. A much more immediate risk factor is the structural condition of the buildings. There is a great deal of loose corrugated iron on walls and roofs across all the sites (Grytviken and KEP excepted). A sheet of corrugated iron in a high wind can fly a very long way – certainly tens of metres and possibly in severe wind conditions several hundred metres. A sheet of corrugated iron is capable of inflicting very serious injury indeed. For this reason alone an exclusion zone around the sites seems to be a sensible precaution.

The structures themselves are also in very poor order. There are dangerous buildings on all sites (KEP and Grytviken excepted) with buildings that are in the process of collapsing. It is possible to see pieces of the structure that have propped against adjacent elements which will collapse if disturbed by the wind or by people or animals venturing into the site. This presents a serious risk of injury or death.

There are, of course, buildings that can be safely accessed on a calm day by sensible people who understand the risks of the site. Some of the steel framed buildings at Leith and Stromness are substantial and present little risk structurally.

The collapsed Store No. 3 at Leith Harbour. Substantial steel frame buildings can collapse.

The collapsed end of the Mess Building at Husvik

Between the Bone Cookery and the Boiler House in Husvik

The large brick and concrete built store at Leith (No 40) and the adjacent Slaughterhouse (No 35) present little structural threat – though there are plenty of other 'Health and Safety' hazards. The large store at Leith, for example, has open traps in the floors which it would be easy to fall through. Even the smaller domestic buildings can be hazardous. Many have suspended ground floors, some over quite deep basements. Many of these floors are now failing.

The exclusion zone does guard against the foolish or unlucky visitor sustaining a very nasty injury. This would be prudent for these sites even if there were no asbestos present.

4.3 The 200 Metre Exclusion Zone

This may seem like a rather draconian measure. On a calm day there is probably little or no risk at all for anyone walking around the site provided:

- they understand what they are doing,
- they do not disturb any asbestos
- they avoid going into or close to any of the many dangerous structures
- they avoid going into the more contaminated areas of the site (generally production areas and boiler houses)

This means that there was little or no risk attached to the recent inspections. However, it is almost impossible to legislate for people applying these sorts of common sense principles. If some people are seen inside the site (and if they are not obviously wearing protective clothing) this will inevitably provide encouragement for others, who are less well equipped, to enter themselves. Retaining the 200 metre exclusion zone would seem to be a sensible precaution for the foreseeable future.

There is, however, a good case for thinking about the exclusion zone on a more site specific basis. At Husvik the two most usable buildings, The Managers Villa and the Radio House are well away from the area of the contamination and are probably far enough away to avoid the dangers of flying sheets of corrugated iron. With a modest clean up to remove or encapsulate the asbestos in the buildings and in the immediate area it would seem possible to bring these buildings back into use.

Sadly the same cannot be said for the Manager's Villa at Stromness. Because of its association with Shackleton this is, no doubt, a place that many tourists would wish to visit. However, the real Manager's Villa (building No 16) is right in the heart of the site and is close to the heavily contaminated boiler house. The building itself is also in very poor structural condition and should not be entered without extreme caution. Even the building (The modern manager's house No 20) which has been

The sign which is both on the wrong villa and now within the 200 metre exclusion zone at Stromness

mistakenly identified in the past as the house visited by Shackleton and his comrades is still relatively close to the heart of the site.

There do not appear to be any buildings at either Leith or Prince Olav Harbour that could safely be brought back into use ahead of dealing with the major risk items. At Prince Olav harbour all the buildings are in such poor structural condition that major repairs (essentially rebuilding) would be needed before any could be used.

At Leith the most obvious building to be brought back into use would be the Stewards Store (No 40) – this is a solid building and in better condition that most – however, it is in the heart of the site and to get to it one would have to walk past collapsing and potentially contaminated buildings.

Warning sign at Stromness. These signs are at all the stations and were erected in 2004.

Possible courses of action with regard to the exclusion zone might be:

- The training of some member(s) of the staff working for GSGSSI so that they can make a sensible assessment of the risks involved in accessing any of the sites. This would mean some training in the identification of asbestos and an understanding of how to assess the risk it poses. It would also require some training in the risks associated with hazardous structures. With this training it should be possible to provide supervision to allow people, with a real need, to visit the less dangerous areas of the site. This might include environmental scientists, film crews or Museum staff.

- Reconsidering the signage. There is a conflict between the small "Keep out – asbestos hazard" signs at the 200 metre zone and the larger and more informative signs that are now well within the zone. The larger signs provide a temptation to walk into the exclusion zone to read what they have to say. It would be desirable to have the larger signs at the outer perimeter and generally to make the signage more informative. The signs should not just focus on the asbestos but should make it clear that there are serious structural dangers on the sites as well.

- As it seems likely that general visitors will be excluded from the sites for the foreseeable future there is a case for commissioning a detailed record of the structures before they do finally collapse. This has largely been done from an industrial archaeology point of view by Bjørn Basberg and his colleagues – but it would be good to have a more complete visual record of these sites. Perhaps a film crew could be commissioned both to make an educational video for general viewing as well as a more methodical recording of all the structures.

5.0 Cultural Heritage Significance

The assessment of heritage significance is not a straightforward business. The criteria that are used to make assessments are different in different countries and the emphasis on what constitutes "Cultural Heritage" has changed considerably over the last couple of decades. In the case of the whaling stations there is the basic question of whose cultural heritage this is. It is clearly the current responsibility of the Government of South Georgia – but in cultural terms it is more Norwegian heritage than that of any other country. It would be desirable when making any final assessment of the 'cultural heritage' value of these sites to consult with interested parties in Norway.

Though the terminology may have changed the basic principle of making a cultural heritage assessment is to try to make a balance judgement as to why an object, a building or in this case a complete site (with many different objects and buildings) is significant. This is to attempt to look beyond the obvious historic or aesthetic criteria that may have been widely used in the past.

In this report the assessment has been made using the criteria given in the 2008 document produced by English Heritage "Conservation Principles, Policies and Guidance".

This suggests making the assessment under four categories:

- **Evidential Value** – the potential of a place to yield evidence about past human activity.

- **Historical Value** – the way in which past people, events and aspects of life can be connected through a place to the present. This may be illustrative or associative.

- **Aesthetic Value** – this derives from the way in which people draw sensory and intellectual stimulation from a place.

- **Communal Value** – this derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. These communal values are closely bound up with historical and aesthetic values but tend to have additional and specific aspects.

Fortunately a good deal of work has already been done on the industrial heritage significance of the station by Bjørn Basberg and his colleagues. There is a record of the buildings and their uses which was made in the 1990s when they were in much better condition than they are today. This looks in detail at the processes in the production areas and also assesses the uses of all the other buildings. The 1990s surveys by Basberg makes an attempt to address what the physical evidence tells us about the life of the occupants.

5.1 Evidential Value

There can be no doubt that these stations have a wealth of material for showing how the shore based whaling stations worked and how the various classes of managers, tradesmen and labourers lived. Because the stations were closed down with the expectation that they would be reopened a great deal of material was left on the sites. This ranges from the major items such as ships and heavy machinery to the minor and personal items, stores, paper records, tools and furniture.

The bulk of the production plant, crucial to the understanding of the industry is left in place. This means that the various pressure cookers, rotary ovens, conveyors, hoists, winches, steam saws, presses,

Grytviken in the 1920s showing the coal heaps and the elevated railway. There are no large oil tanks for fuel. The tanks in the foreground with conical roofs still remain.
(© Grytviken Seen Through A Camera Lens, Institut Minos)

Fuel tanks at Grytviken in 2010. The large tanks in the foreground are the 1920s tanks minus their roofs. The later diesel tanks behind.

Conveyor equipment for the Guano Plant at Grytviken. There is a large amount of similar equipment at all the sites.

centrifuges that make the process comprehensible are all still in place at all the sites other than Stromness where most was removed after the Second World War. The layout of the plant and even the historic development of the industry can be seen. The buildings were extended as production increased and as different and more efficient pieces of equipment came into use. The processes are probably now most difficult to understand at Grytviken because of the extent of the clean-up operation. They are at their most comprehensible at Leith where the buildings remain in much better order than at Husvik.

The power plants and boiler houses all remain in position in varying degrees of preservation on all the sites – though these do tend to be the buildings that are most contaminated with asbestos. Chimneys have collapsed but the boilers they served all remain in position – these are generally substantial cast iron boilers surrounded by fire brick. Steam was the major source of energy throughout the working life of the stations with a large number of steam engines and winches driving machinery as well as the steam being a vital part of the production process with the steam pressure cookers used to render the whale carcass. The fuel for the boilers in the early days was universally coal and sizable heaps of coal remain at Leith and Price Olav Harbour. The distribution of coal from the supply ships must have been a major task and sites all seem to have used railways for this purpose. Early photographs show a substantial raised railway running around the Grytviken site and there appears to have been a similar raised railway at Prince Olav. With the exception of the single upper station at Prince Olav Harbour all traces of these raised railways have disappeared – though ground level tracks remain at all the sites.

The use of coal gave way to diesel oil and all the sites (with the exception of Grytviken) have a network of pipes running around them carrying the whale oil, the diesel oil and carrying steam – these latter having the asbestos lagging on them. The large cylindrical oil storage tanks are ubiquitous as are the various pump houses. The pipework and their supporting gantries are certainly part of the richness of these sites and add greatly to the understanding of how the processed worked. The fact that they have all been removed does make the Grytviken site feel substantially impoverished.

Electric power was used for lighting from an early date. It was also used for electric motors driving conveyors, presses and some winches, but it does not seem to have replaced steam to any significant degree in the production areas or in driving the machinery in the workshops. The earliest generator sets, like the splendid pair at Stromness, were driven by steam engines. These gave way to diesel electric generator sets so that the main power station at Leith had six steam and five diesel driven generators. There were also hydro-electric generator sets at Grytviken and Leith. The majority of the generator sets remain in place though there has been some disruption at Leith as the copper windings of the dynamos were a target for the scrap metal reclamation of the Argentinians in 1982. As well as the power station buildings themselves all the sites have a series of substations with switch gear remaining in place.

The majority of the workshops have the heavy machinery left in place so there are forges, bending machines, lathes, drills and the steam engines and belt and pulley systems to run them. In areas like the blacksmiths shops the tools of the trade are still in racks around the walls. The hand tools have been removed from the carpenters' shops but the larger elements of woodworking machinery, saws, planers and drills are all still there. There is a large amount of stored material, timber, fire bricks, steel sheet, pipes and rolled steel sections.

In the storage buildings there are still large quantities of nuts and bolts, rivets, washers and all the miscellaneous stores needed for a busy working community. Spaces like the laundries and butchers shops still have the machinery in place. Radio rooms and laboratories tend to have a fair amount of equipment remaining. There are also some intriguing specialist areas such as the pattern makers store. These have a vast selection of wooden patterns showing the range of material it was possible for the station to manufacture on the spot.

There is less material left in the domestic accommodation. There is some kitchen equipment and furniture in the messes and the barracks still have bunk beds in many places. However, there is little by way of personal possessions and little sign of any foodstuff remaining. The ablutions blocks remain fitted out with WCs, showers, wash basins, drying rooms and saunas (something it is difficult to imagine if these were truly 'British' stations). There is more evidence of how people lived in the smaller more private rooms. It is quite common to find a bedroom or two off the storage areas above the workshops. These tend to be fitted out with built in beds, cupboards and shelves. These have been well catalogued by Basberg et al.

The cultural facilities have perhaps fared worse than any other – with the exception of the church and library at Grytviken. All the cinemas have collapsed with only a few projectors and some mouldering seats to show that they were once there. There is no sign of the libraries at any of the stations though it is known that the Leith Library was removed to Grytviken.

There has, of course, been a good deal of material removed. Some of this would have been removed whilst the stations were still active probably in the period from the end of the Second World War up to the

eventual closure in the 1960s. Some of the plant has been removed from Stromness (when turning it into a ship repair yard). The tanks and many of the cookers have been taken away from Prince Olav – presumably to another of the sites.

There has also been a good deal of petty pilfering by visitors, scientists and the military over the past years. It is likely that the stores contained a good deal more material than they do now and several of the more substantial buildings have been used as temporary camps for military parties on training exercises. However, despite this there is a wealth of material remaining on the site which sheds a great deal of light on the fine detail of the way the stations operated.

In evidential terms there is sufficient for these sites to be of high cultural heritage significance. The buildings demonstrate the scale of the industry and the number of people who were employed at the stations. The variety of different spaces still equipped with the 'tools of the trade' show how well these communities operated as self-contained units largely cut off from the rest of the world for a good part of the year. The remaining whaling plant demonstrates both the scale and importance of the industry but also allows the actual processes to be clearly understood. As a monument to a major industry which has entirely disappeared, these sites are highly culturally significant in evidential terms.

5.2 Historical Value

The modern world has tended to forget what a major industry whaling was and how many of the countries in the world were involved in the trade. When whaling is discussed today it tends to be entirely in terms of conservation. The modest (very modest by historic standards) whaling activities of Norway, Japan and of some groups of indigenous people living in the high Arctic are looked on with general disapproval by much of the world. Yet this is to forget that it is only 25 years ago that a moratorium was called on whaling. Anyone in the western world aged over 40 is likely to have eaten margarine or to have used soap or cosmetics with a good proportion of whale oil in them. The use of whale oil as the glycerine in the high explosive (nitro-glycerine) was vital part of the production of armaments in both world wars. This was an industry that was a major part of the economy of many industrialized countries, which employed thousands of men and which endured for a couple of centuries.

The shore based stations are an excellent illustration of the way a part of the industry worked between 1905 and 1960. This fills the gap between the early whalers who were essentially based on board ship and the later pelagic fleets which eventually put the shore based stations out of business in the second half of the 20th Century. The 19th Century whalers were working largely at sea, flensing the whales in the water and then using try pots for the rendering process using only the blubber. A difficult and wasteful business with the bulk of the whale carcass simply left as carrion. The later pelagic whaling fleets became the obvious way for the

Men working in the floating dock in Grytviken in 1928 *(© Grytviken Seen Through A Camera Lens, Institut Minos)*

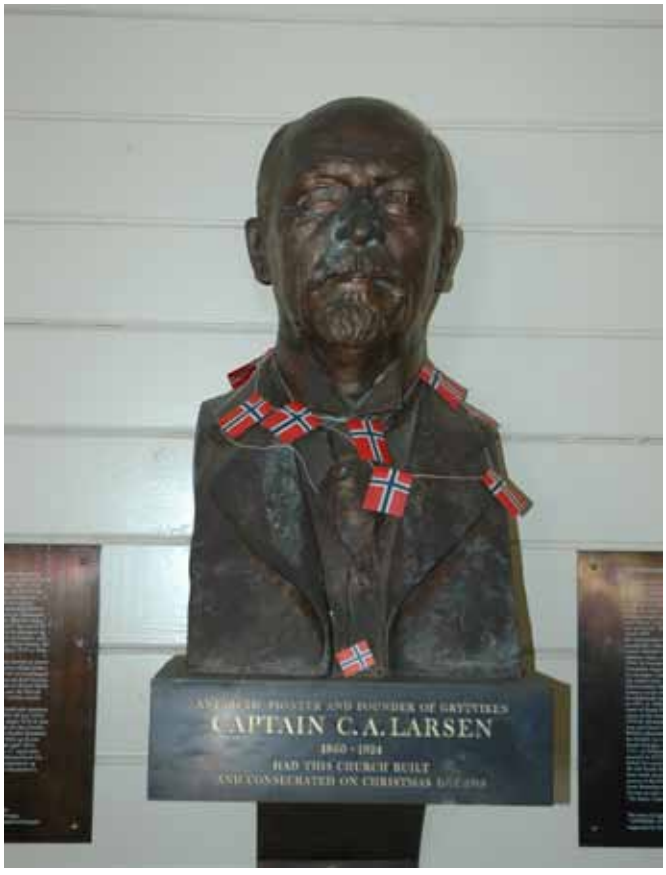
industry to operate once the stern slipway to enable whales to be hauled on board had been perfected. The factory ship could follow the catchers and go where the remaining whales were. The shore based stations had to send catchers increasingly far afield with all the problem of getting the carcass back to the stations within the permitted time limits. There were plenty of other shore based stations in the world (in Norway, South Africa, Australia, New Zealand, the South Shetlands) but none remain in a state of completeness to match those on South Georgia. Because they were relatively accessible everything of value or usefulness at these other stations has been removed.

The remains of the stations do provide a very direct illumination of the history of this particular period of the whaling industry. The physical remains are a very clear testament to the scale of the industry, the numbers of men involved in it, the way of life that these men had and the way that the whale blubber, meat and bone was processed. It also illustrates very clearly the self sufficient nature of these remote communities with a capacity to make and repair anything. The stations represent, in microcosm, substantial towns with all the major trades represented on the site. The stations are also a clear illustration of the amount of money that was being made from the whaling industry in the first few decades of the 20th Century. The speed with which the stations grew up, the fact that there was scope for six shore based stations, the scale of the plant, the capacity of the storage tanks and the amount of equipment and buildings are all impressive.

There is also the significance in historical terms associated with particular individuals and events. The most obvious of these is the association with Sir Ernest Shackleton. Grytviken was visited by the Imperial Trans Antarctic Expedition in November 1914 at the start of the ill-fated voyage to the Weddell Sea and of course, most famously, Stromness was the station which Shackleton, Worsley and Crean walked into on 20th May 1916 after the epic voyage from Elephant Island and the trek across the island from King Haakon Bay. Grytviken is also the place of Shackleton's burial. He died of a heart attack on 5th January 1922 and was buried in the whaler's cemetery with a simple granite memorial. The story of Shackleton is one that caught the imagination of the world and has been immortalised by his own account of the expedition in 'South' published in 1919 and by many other books.

There was an original documentary film of the expedition produced in 1919 by the expedition photographer Frank Hurley. At least four films of the expedition have been produced in the last twelve years of which the best know is probably "The Endurance" made in 2000 by George Butler. In 2001 a two part television series was made "Shackleton" featuring the actor Kenneth Branagh. All this has given Shackleton something of a mythical status and his story and his grave are undoubtedly one of the reasons why tourists wish to come to South Georgia.

However, to make too much of the significance of one man, who was there but fleetingly, is to devalue the lives of the many thousands of others who lived and worked at the stations for many years. A good case can be made for Captain Carl Anton Larsen being a figure of equal significance if not as widely known as Shackleton (at least in the UK – he may well be better known than Shackleton in Norway and Sweden). Larsen was aboard the *Jason* when it carried Nansen to Greenland in 1888 for his east-west traverse of the country. He led the first Norwegian Expedition to Antarctica between 1892 -94 also aboard the *Jason*. This expedition made a number of major contributions including the discovery of the Larsen Ice Shelf, the Foyn Coast in Graham Land, King Oscar land and Robertson Island. During this expedition he was the first person to discover fossils on Antarctica which led to the award of the *Back Grant* from the Royal Geographic Society. Rather less academic but perhaps equally significant Larsen was the first person to use skis in Antarctica when he skied on the Larsen Ice shelf in 1893. Between 1901 and 1904 Larsen was the captain of the *Antarctica*, the ship of the Swedish Antarctic Expedition which was crushed by the pack ice in 1903 resulting in the crew overwintering on Paulet Island.



Captain C.A. Larsen's bust in the Church at Grytviken

Funeral procession at Grytviken in the 1920s. The 'Marshall's Staffs' carried at the front of the procession are typical of a Norwegian funeral.
(© Grytviken Seen Through A Camera Lens, Institut Minos)

It was after this experience and being rescued back to Buenos Aires in 1904 that Larsen set up the *Compañía Argentina de Pesca* and raised the necessary capital in Argentina, collected men ships and materials in Norway and constructed the beginnings of the Grytviken station at the end of 1904 landing the first whale just before Christmas. Larsen lived at Grytviken with his wife, three daughters and two sons. In 1910 he and his family became British citizens as long term residents of South Georgia. He died on December 8, 1924 and has a fitting memorial in the church at Grytviken which he commissioned and helped to pay for.

If Larsen and Shackleton are well known figures there are also a mass of more ordinary men who lived extraordinary lives at the whaling stations. Some of these people are captured in the photographs and archives of the Whaling Museum at Grytviken and, perhaps more significantly in *Commander Christen Christensen's Whaling Museum,* also called *The Sandefjord Whaling Museum (Hvalfangstmuseet)* in Sandefjord in Norway where there is a significant archive of material relating to the whaling industry. Amongst other documents are a collection of photographic plates taken by Theodor Andersen who first went to Grytviken in 1923 and worked there as a carpenter for several seasons.

A collection of these is published as "Grytviken seen through a camera lens" by the Institut Minos in 2004 edited by Stig-Tore Lunde (ISBN 82-303-0221-9). This has splendid collection of photographs of men going about their everyday lives at Grytviken. This, and documents like it, give an added dimension to the significance of the stations and the men who occupied them.

In historical terms these stations are highly significant as a record of this major industry which has otherwise disappeared more or less entirely. The historic value of the sites lies, to a great extent, in the fact that they have been left unaltered. This is very unusual and is entirely due to their remoteness. The historical significance of Grytviken has been severely diminished by the cleanup operation with the removal of most of the buildings and much of the peripheral equipment. However, this clean-up has, of course, allowed the site to be accessible to visitors and for the Museum to remain in use. There is a good case to say that access into a sanitized station is at least as and possibly more valuable than a complete station that cannot be accessed for safety reasons.

5.3 Aesthetic Value

The definition of aesthetic value given by English Heritage is that it *"Derives from the way in which people draw sensory and intellectual stimulation from a place".* This is an intriguing definition to attempt to apply to places that have no possibility of access in the foreseeable future. There are, however, some aspects of the aesthetic qualities of these stations that merit some consideration.

There is little visual or design merit in any of the physical remains of the stations. The buildings were utilitarian in the extreme and were constructed for the most part of frames clad with corrugated iron. The church at Grytviken is the closest that any building comes to being aesthetically remarkable – though it would hardly merit a second glance in any small town or village in Norway. Some of the small domestic buildings, the managers houses for example, are pleasing enough in a low key way but are not in themselves remarkable. However, what is remarkable is these buildings in their context. The natural landscape of South Georgia is itself remarkable - towering peaks rising abruptly from the sea with very little flat ground. The landscape is dominated, from a distance, by the white of the snow and the black of the rock. It is only as one gets closer that the brown colouring of the tussock grass is apparent. The buildings seen against the background of the towering landscape do become much more remarkable with even the largest buildings looking small in proportion to their surroundings. The church at Grytviken always stood slightly apart from the other buildings of the station – but since the demolition of the barrack blocks and the cinema it is now seen in complete isolation and this certainly heightens its interest and aesthetic appeal.

The question may well be asked as to whether the stations represent a visual and environmental blot on this otherwise pristine landscape. Whilst there may be a case for the stations being an environmental problem there is little in the argument that they are a visual problem. When in the stations themselves they are certainly a mess and were much more so when they were fully in operation. R.B. Robertson in his book "Of Whales and Men" notes in 1954 that Leith was the most squalid place in the entire southern ocean. However, when seen from off shore the stations are little more than a smudge on the landscape with the rusting corrugated iron blending in well with the brown of the tussock grass. Even when on land a walk of a few hundred meters away from the stations is to have them become an insignificant part of the landscape dominated as it is by the mountainous terrain.

Whilst there may be little of high aesthetic significance at the stations there do not seem to be any good argument for the removal of the stations on aesthetic grounds.

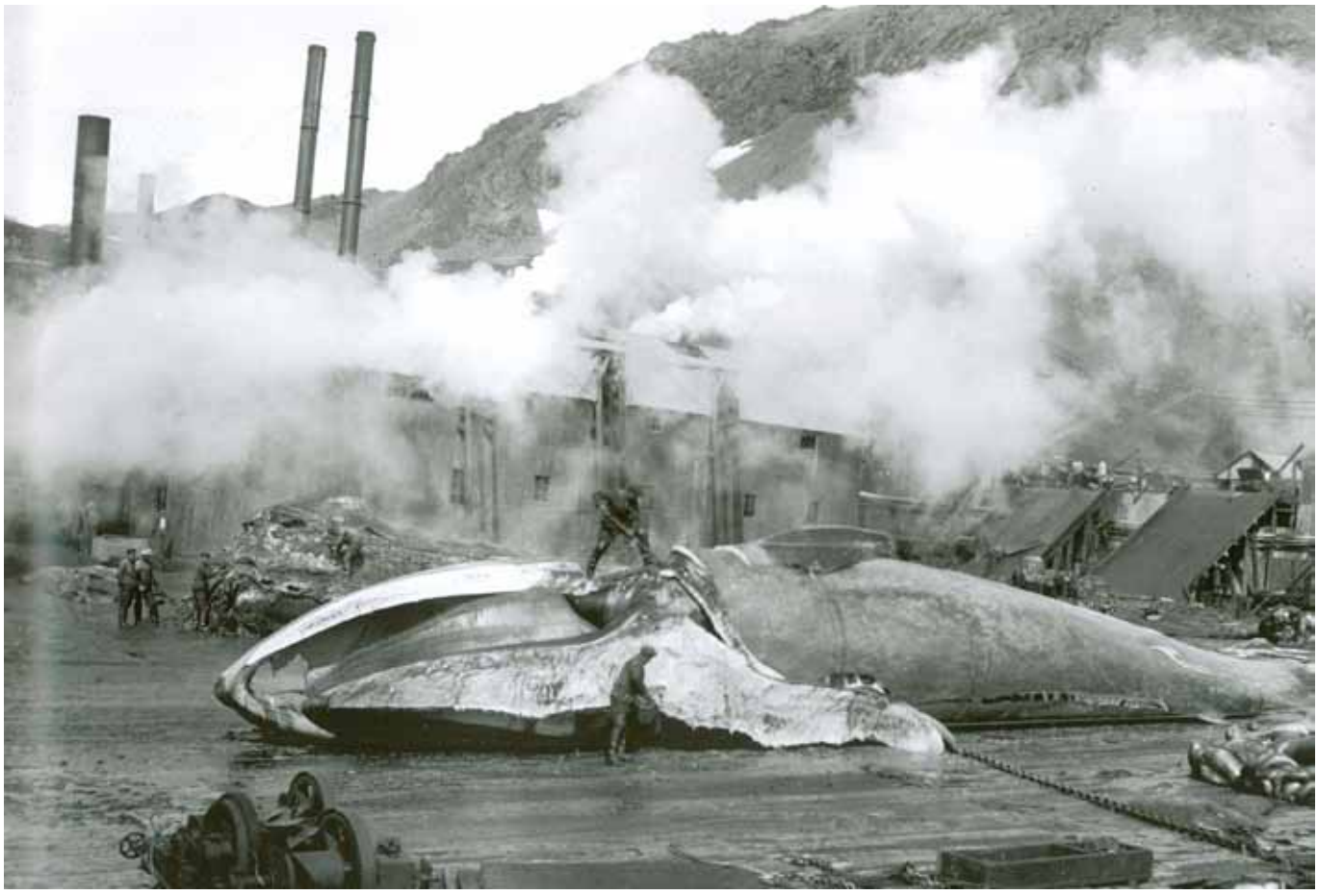
Grytviken seen from King Edward Point. Little more than a smudge on the landscape.

5.4 Communal Value

Communal value is probably the hardest category to define. It is relatively straightforward to assess the historical, archaeological, educational and even aesthetic qualities of any monument of site. It is more difficult to try and pin down the spiritual and emotional qualities that may give special significance to any place. The definition given by English Heritage is that 'Communal Value' is derived from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

On this basis these sites are predominantly of very high significance to a section of the population in Norway in the Vestfold County where many of the whalers lived. Even here the feeling for South Georgia must be restricted to a diminishing section of the population. The peak of the whaling activity was now eighty years ago and it is 50 years since the last station shut. Memories are now increasingly likely to be of fathers and grandfathers who went off whaling rather than memories of the actual individuals involved.

There is however a darker spiritual value that should be considered. Whilst these sites are a monument to great human endeavour they are also a grim memorial to the slaughtered whales of the world and to the very large numbers that were processed into oil and meal at these sites. It is difficult not to be influenced by size, with the human frame being a point of reference – killing things smaller than humans (pheasants, trout, blue bottles) seems relatively insignificant whereas the killing of things that are larger (tigers, elephants, whales) seems to be much more emotionally problematic. The sheer size of the whales, the numbers in which they were taken and the devastation that the industry created in whale numbers are all of considerable emotional significance. It would be easy for future generations to see whaling as something done by 'other people' – whereas the reality is that it was done by all the major developed nations and the entire populations of those countries benefitted from produce made with, lit by or lubricated by whale products. This reason alone seems to be sufficient to attribute a high emotional if not spiritual heritage value to all of these sites.



Flensers working on a whale at Grytviken in the 1920s *(© Grytviken Seen Through A Camera Lens, Institut Minos)*

5.5 The Significance of Individual Objects at the Sites

As it seems likely that the four sites (Husvik, Leith, Prince Olav and Stromness) will be closed to all but the very rare accompanied visitor the question needs to be addressed as to whether any objects should be removed from the sites to make them available for inspection, conservation and curation elsewhere. The Grytviken museum has a legitimate interest in this as well as some other Museums with links with the industry. The general view is that when dealing with sites of high cultural heritage significance objects should only be removed under very special circumstances. The reasons for removing objects can be stated as:

- ***Where the object, however interesting, is a danger to the rest of the site or visitors to it.*** Good examples of this might be a wartime bomb or the asbestos in the whaling stations.

- ***Where the object is of exceptionally high cultural heritage and/or high monetary value and is at danger of being stolen if left insitu.*** It is probably fair to say that anything that once fell into this category at the whaling stations has long since been removed.

- ***Where the object is in danger of being damaged to the point of seriously diminishing its significance if it is left insitu and where conservation and protection measures are impossible in its original location.*** Many minor objects can fall into this category – paper records and the cardboard, tin and glass containers with printed labels are obvious objects in this category cartons.

- ***Where the object is of extreme rarity and where by taking it to a suitable museum it can be properly interpreted and be seen by a much larger audience.*** This is a more controversial definition of what might be removed and many conservationists would be concerned to see this as a primary reason for removals. It is, however, the basis on which many museum collections are assembled.

The majority of smaller high value objects have already been removed from these sites either by the original occupants when they departed or by visitors over the last fifty years. A serious search of the buildings might throw up one or two minor high value objects – but it seems to be unlikely that the cost, effort and danger that such a search would entail would be worth the end result.

Steam engine and dynamo sets in the Power Station building at Stromness

There are certainly a few things that fall into the category of being damaged to the point where they are no longer of any significance. Good examples of this are the paper records on Cardex filing systems at both Leith and at one of the remaining stores at Grytviken. There are probably many other examples of paper record or documents that are reaching the point of disintegration. These should be removed and it would be worth considering a properly supervised visit by the museum curators to look for this type of content.

The majority of objects at these sites are, however, common to all of them. The minor variations in the layouts of the plant and the differences in the boiler rooms and power plants have been catalogued by Bjørn Basberg and his colleagues. There are differences but these are in terms of detail rather than in the elements of the actual machines, plant, tools or furniture. On the whole there is little to differentiate the steam engines and winches from one site to the next and there are already good examples at Grytviken where it would be possible to carry out conservation and maintenance work without any risk or excessive expenditure. There may be differences in the minor items in the storage bins, the tools in the workshops, the kitchen equipment (to take but three random examples) but these are unlikely to be sufficient to justify the sort of research and expense likely to be needed to differentiate these pieces of equipment.

Many of the remaining objects are very substantial. The reciprocating steam engines driving dynamos in the power station at Stromness are very fine and made more intriguing by their known former use on the tramway system at Bergen. They are in a substantial building that still has most of its external cladding and are as result still in (what appears superficially to be) excellent condition. However, they must weigh several tons each and removal to a museum site would be a major logistical challenge and fearsomely expensive given that there is no sensible place for even a modest ship to berth. The engines and generator sets would make much less sense without the switch gear and control panels and without the context of the different steam and diesel electric generator sets that are ranged alongside them. The enormous effort and expense associated with such removals would seem to be inappropriate given the quantity of equipment that deserves the attention of conservators on the Grytviken site and given the very limited resources of the Museum staff and the lack of proper storage space. If time money and staff are available then recording the equipment and objects in detail insitu seems to be a better way to direct resources with removals limited to a small number of portable perishable items.

5.6 The Removal of Material for Scrap Value

The question has been raised as to whether it would be appropriate to remove material from these sites for their scrap value. A major clean-up operation is planned for the Falkland Islands with the removal of a good deal of scrap metal left from the 1982 conflict and its aftermath. The suggestion has been made that the quantity of scrap metal in the whaling stations might make this a more viable option.

A report was prepared by Dan Weinstein and Ben Hodges which is titled *"Metallic materials availability at the four major whaling stations on the Island of South Georgia".* The report is undated but the 'Poles Apart' report of May 1999 appears to have been generated out of this interest and the two were most probably done together. This suggests that at that time there were some 12,377 metric tonnes of scrap metal – the vast majority of it being ferrous.

Their figures are:

Husvik	1,481 tonnes
Grytviken	3,531 tonnes
Stromness	2,914 tonnes
Leith	5,216 tonnes

The survey team were unable to visit Prince Olav harbour – though it is likely that the scrap here would have been significantly less than Husvik. This was, of course before the clean-up operation at Grytviken which will have substantially reduced the tonnage there. The report includes all metal items as potential salvage even the three ships at Grytviken (*Petrel* 245 tonnes, *Dias* 167 tonnes, *Albatros* 210 tonnes) and the *Karrakatta* (179 tonnes) at Husvik were included!

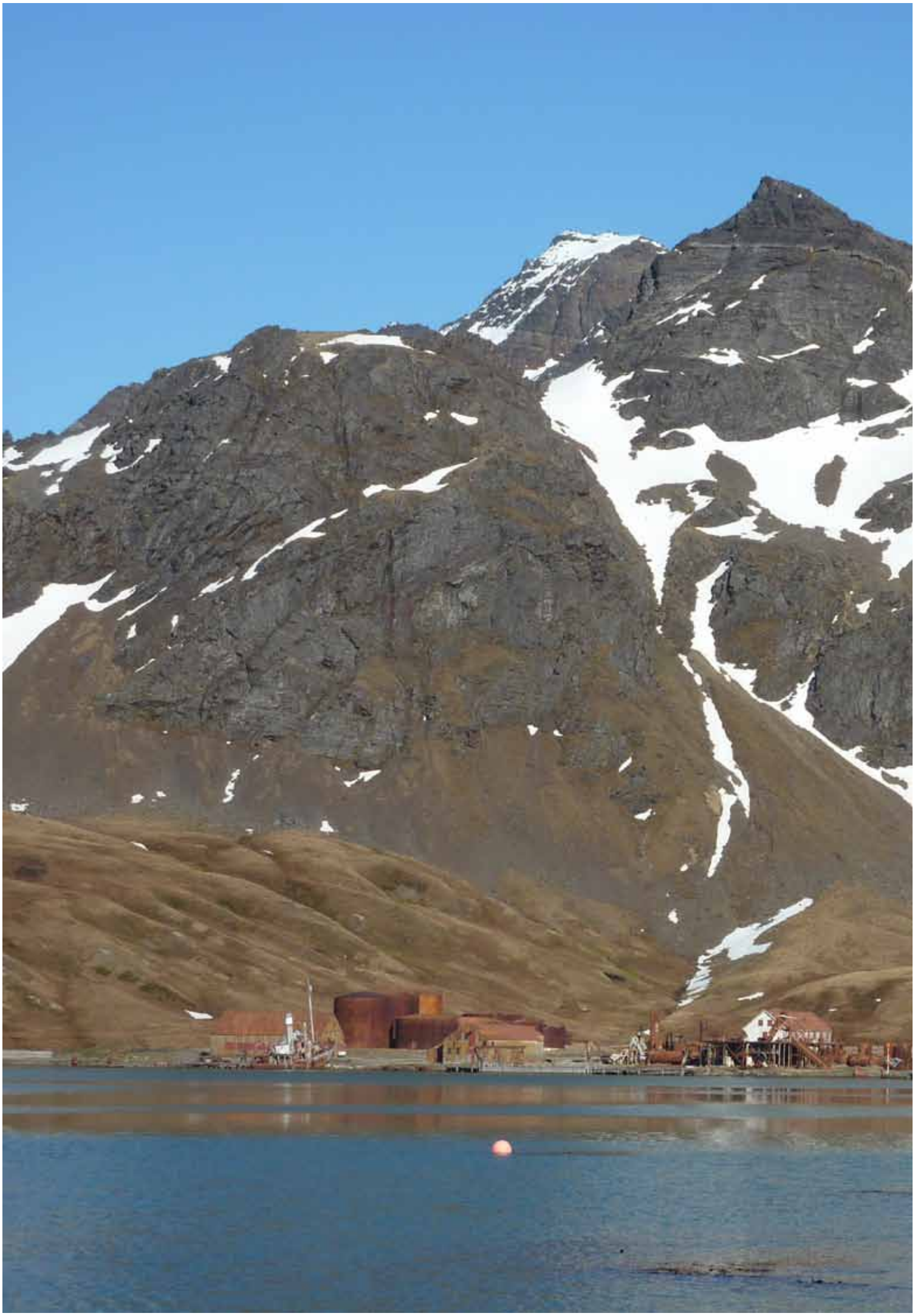
Interestingly the report makes reference to the removal of a large amount of material during the cleaning and salvage operations in 1990/91. They suggest that a large amount of unused bars, beams and angle were removed and that this is the explanation for the empty storage racks whereas the pipe racks remain full.

The removal of scrap metal from these sites is likely to be seen today as vandalism. If these sites have cultural heritage significance (which they certainly do) then the removal of material could only be justified on some very limited grounds. If a major clean up was to be carried out at any of the sites then there might be some justification for removing some of the scrap on the basis of helping to fund the clean-up operation – but it is unlikely that there would be sufficient value in the scrap to make this worthwhile. The corrugated iron has no significant scrap value and it is only the more substantial sections of steel that would be worth removing.

The most valuable items to salvage are the heavy pieces of equipment, boilers, cookers, engines, winches, generators and machine tools – but these are, of course, exactly the pieces of equipment which one would wish to see left insitu as at Grytviken.

In conservation terms it is difficult to see any justification for removal of material for scrap from any of these sites.

Steel sheet stored in the workshop at Stromness



6.0 World Heritage Site Status and Other Sources of Funding

6.1 World Heritage Site

The question has been asked as to whether the stations meet the criteria for consideration for World Heritage status. World Heritage status is sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO) which seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty called the *'Convention Concerning the Protection of World Cultural and Natural Heritage'.* This was adopted by UNESCO in 1972.

An Intergovernmental Committee called *'The World Heritage Committee'* was established by UNESCO which is composed of 21 States who are elected by all the States who are party to the convention. The current committee is composed of the following countries – Australia, Bahrain, Barbados, Brazil, Cambodia, China, Egypt, Estonia, Ethiopia, France, Iraq, Jordan, Mali, Mexico, Nigeria, Russian Federation, South Africa, Sweden, Switzerland, Thailand and the United Arab Emirates.

Nominations to be considered for World Heritage status are made by Governments who are party to the convention – this means that if an application were to be made for the sites at South Georgia the nomination would have to be made by the British Government which would be strongly resisted by the Government of Argentina.

The nomination procedure is quite drawn out (at least two years) and states are restricted to the number of nominations they can make - this is a maximum of two per country and a total maximum in any year of forty five nominations. There is a tentative list of potential World Heritage sites that has been recently compiled by DCMS and it is unlikely that any new site will be considered for the next ten years.

The selection criteria for World Heritage Sites are set out as follows:

i. to represent a masterpiece of human creative genius;

ii. to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;

iii. to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

iv. to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

v. to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

vi. to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

vii. to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

viii. to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

ix. to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

x. to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

The first six criteria are relevant to Cultural sites and the remaining four to natural sites. The whaling stations would fall into the former category. To be considered for World Heritage status any site must meet at least one of the criteria. Arguably the whaling stations meet, at least in part, criteria (iii), (iv), (v) & (vi).

A good deal of emphasis is laid on the authenticity and integrity of the sites. This could cause more of a problem. The authenticity of the sites cannot be doubted but the integrity is problematic. Arguably Grytviken would no longer qualify for World Heritage status following the clean-up operation which leaves so little of the original material in place. The other sites obviously do qualify at present but there is the dilemma that the work necessary to make the sites safe will, as at Grytviken, destroy a great deal of the present integrity.

In any application for World Heritage status it is necessary to demonstrate a clear management structure that can regulate the use and condition of the buildings and which will provide a clear way of ensuring they are properly maintained in the future. This implies a very considerable ongoing financial commitment to the stations to ensure that they are properly managed and maintained.

There is certainly funding available through UNESCO for World Heritage Sites – but there is increasingly the need to show that much of the repair and conservation work has been completed before World Heritage status is granted. Both the timescale and the need for substantial expenditure before any application for World Heritage status are problematic. The condition of the stations is now critical – in another ten or fifteen years the scale of the collapse will be that much greater.

6.2 World Monuments Fund

The World Monument Fund (WMF) is a non-governmental body that exists to protect cultural heritage through assistance with technical advice and crucially with funding. It was set up in the USA in 1965 and has helped to fund over 450 projects worldwide. Since 1995 there has been an affiliated office in the United Kingdom. WMF does give grants to help with specific projects but these tend to be modest and of the "pump priming" sort. They do not have any great amount of money to distribute themselves but they are very good at putting projects in touch with suitable benefactors.

WMF maintains a list of buildings at risk, its 'Watch List' and being on this certainly raises the profile of the project and perhaps makes it easier to attract funding. The Watch List is updated from time to time though probably not until 2013 as it has recently been updated. If there is to be any attempt to conserve another of the sites WMF would certainly be a good ally.

6.3 Heritage Lottery Fund and English Heritage

Heritage Lottery Fund is now the major provider of funds for heritage conservation work in the UK. They are one of the distributors of lottery money to good causes. The amount they have to distribute varies but is currently around £300 million per year. Sadly they are unlikely to be able to help with any project in South Georgia. A determined attempt was made three or four years ago by the Antarctic Heritage Trust to get funding for the conservation work at Shackleton's Hut at Cape Royds. A formal application was considered by HLF's Trustees who decided that they could not fund projects outside the borders of the United Kingdom. The concern seemed to be the possibility of setting a precedent that might apply to all British overseas heritage (New Delhi for example!).

English Heritage is currently suffering a major cut back in its budget, which was already very modest as far as grant giving was concerned. It is highly unlikely that they would be able to provide any financial assistance. They do remain a very useful source of professional expertise and may be able to help on that basis.

6.4 The Norwegian Government

Whilst the stations stand on the territory of the Government of South Georgia and are (technically) their responsibility and whilst there is an undoubted British interest in the stations, the real heritage significance relates to the Norwegian presence. The bulk of the people who worked at the stations and probably all the expertise was Norwegian. Many of the earlier buildings are Norwegian shipped out as a kit of parts.

There is undoubtedly great interest in the fate of the disused stations in Norway. The work done by Bjørn Basberg and his colleagues on the archaeology of the stations is testament to this. There is, however, little sign of any financial help coming from the Norwegian Government, but this should be an avenue explored in more detail as the future plans for the stations are adopted.

6.5 Other Sources of Funding

This is a major topic and beyond the scope of this report. There are certainly donors out there who are willing to give substantial sums for causes they believe in. The work carried out by the Antarctic Heritage Trust has received generous funding from both corporate sponsors (like American Express) from Trusts (such as the Getty Foundation) and from private individuals. Fundraising is now a profession in its own right and it may be that at some point in the future it would be appropriate to discuss the problem of funding work in South Georgia with a professional fund-raising consultant. However, some serious decisions about the long-term future of the sites needs to be made before this.

There would seem to be three major impediments in the way of fundraising:

i. For much of the world whaling is not seen as an acceptable activity. The fact that this was not the case when the stations were in operation will probably not weight sufficiently strongly with potential donors to counter the negative image of the whaling industry.

ii. There may well be a reluctance to fund something that can be seen as a 'Government' responsibility. Even though the 'Government' in this case is very small and has its funding fully committed to other environmental projects there will probably be a tendency to think that any work should be funded by GSGSSI or by the FCO or by the UK Government. It might be necessary to do the fundraising through a Trust and the South Georgian Heritage Trust would be the obvious vehicle. However, this would no doubt require a good deal of discussion and agreement as it would fundamentally change the relationship between the Trust and GSGSSI.

iii. The nature of the problem and the likely outcome may well be too daunting for most donors to contemplate getting involved. The scale of the problem and the likely costs, even if only dealing with a single site, will be high and the commitment will need to be long-term.

The condition of much of the building stock is very poor and, as at Grytviken, the asbestos is in many areas within the semi-collapsed buildings. The probable outcome of work to remove the asbestos hazard is to have a set of buildings which have largely been dismantled. This leaves the options of either having a relatively bare site (as at Grytviken) or having a lot of reconstruction of what would in many cases be replicas. Neither outcome will be particularly appealing to the various conservation bodies.

iv. There is also the question of the GSGSSI's own priorities. At present there is a major desire to raise funds for environmental conservation work for the eradication of introduced species. It may well be impossible to have a parallel fundraising programme for conservation work to the buildings of the stations.

7.0 Discussion of the Possible Way Forwards

7.1 Possible Options

There are clearly several ways of proceeding ranging from the 'doing nothing' option, to a decision to go for a full 'conservation and restoration' package. The most obvious of these are considered below:

7.1.1 'Doing Nothing'

This is in effect a simple extension of the present policy. It would involve the enforcement of the 200 metre exclusion zone and then abandoning the remaining stations to their fate. The stations will become more dangerous for a period of years as the buildings continue to collapse and then should in time become less dangerous as far as the structures are concerned. Over a long period, if the buildings are allowed to collapse naturally, the asbestos will probably skin over or be buried in vegetation. However, with no environmental clean-up these sites will remain a hazard to anyone who disturbs them for years to come.

7.1.2 A 'clean-up' Operation at one of the Stations

If a further clean-up operation is contemplated then it would probably make sense to deal with one station at a time to limit the expenditure in any period. A 'clean-up' operation would, in essence, produce a result like the one at Grytviken with the collapsed buildings cleared away and the major pieces of plant exposed to the elements. If this were to be done then the most obvious station to start with is probably Stromness. This would be popular with tourists as it would enable them to complete the final stage of Shackleton's trek to the site of (or reconstruction of) the original Manager's Villa. Stromness also has a reasonable number of solid steel framed buildings which are capable of being satisfactorily repaired. The downsides of a major clean-up at Stromness are that this station has little trace left of the whaling industry and, with the exception of the Shackleton connection, has less to offer than the other sites in interpretation terms.

7.1.3 A 'clean-up' Operation at all the Stations

Whilst this may be desirable in environmental terms to get rid of the asbestos hazard it has little else to commend it. The expense would be enormous and there would be little to see for the end result. The clean-up at Grytviken has produced a site which whilst it is safe is intrinsically less interesting and more difficult to interpret than the more complete sites. It seems doubtful that having five clear sites would add to the visitors understanding of the whaling industry – indeed it is doubtful whether anyone would visit all the sites. This approach can really only be justified on safety and environmental grounds.

7.1.4 Conservation Approach at one or more of the Stations

This is probably the most desirable option – though much the most expensive and the most difficult. This approach would attempt to stabilise the sites, both structurally and by removing the asbestos, to make them safe to enter. Where buildings are solid they would be repaired and have cladding refixed. Where they have partially collapsed they would be stabilised insitu. Collapsed buildings would be consolidated but left as far as possibility in their present state. This implies the removal of asbestos without the simultaneous demolition of the buildings – something that may be possible but which will be more difficult, time consuming and expensive than the approach adopted at Grytviken.

If a conservative approach is to be adopted then probably Leith would be the best candidate. Prince Olav Harbour is in such a derelict state that there would be little left after any clean-up operation – the bone cookery, meat cookery and boiler house have already collapsed and the blubber cookery and guano plant are in very poor order.

Husvik has some buildings in better shape than those at Prince Olav Harbour, but sadly the three cookeries are all in appalling condition and it would be difficult to salvage more from these areas than the present survivals at Grytviken.

Stromness, as already noted, would lend itself to a conservation based approach to a clean-up, but there is the difficulty of the lack of whale processing plant. Whilst there are some spectacular collapses at Leith there are also a good collection of solid buildings. In particular the buildings surviving around the flensing platform remain in far better order than those at Husvik or Prince Olav. If the purpose of the conservation work is to demonstrate the nature and processes of the whaling industry then Leith Harbour is probably the best place to do it.

7.2 Grytviken Harbour

Is the work that has been completed successful? This seems to be a very relevant question as it does provide a pattern for a possible way forwards. There are certainly things in favour of this approach:

- The work was expensive, but not impossibly so. It is conceivable to think that with some outside financial assistance GSGSSI could afford to adopt this approach at all the stations over a number of years.

- The work has dealt with (virtually) all the asbestos and made the area safe for visitors to walk round so that they can seen the Museum, the Church and the Cemetery.

- Leaving the major pieces of machinery and equipment in place does give a chance to explain the processes of rendering a whale carcass.

However, there are some disadvantages to the approach which may outweigh the advantages:

- The site has lost any sense of being a heavily occupied busy place. The clearance of all the domestic buildings (Nybrakka excluded) leave little indication that this was a bustling industrial 'town', the home to several hundred men.

- The richness of the site in terms of the secondary structures such as pipes, cables, gantries, railway line, fire hydrants has been lost.

- The process of rendering the whale carcass is made a good deal harder to understand with the absence of the conveyors, ramps, lifts and pipes.

There must be some doubts as to whether it would be a sensible way to spend money to carry out the same level of clean up as at Grytviken. The sites in the reduced state would all be much the same and it is doubtful if there would be much to be gained by visiting more than one. The best argument in favour of having a radical clean-up operation is the 'tidy minded' one of sorting the problem out and not having any ongoing liability. Whilst this has the appeal of removing an environmental problem it must be seen as a backwards step in terms of the heritage value of the site. The exclusion zone may be a stop gap measure, but it does leave all the material intact, subject to decay and in a dangerous state certainly, but crucially still all there.

7.3 The Longer Term

What are the long term consequences of doing nothing? The remaining structures on the site will gradually collapse, fairly rapidly in the case of the timber framed buildings and over a longer timescale for those with steel frames. The asbestos is likely to fall off in due course and either be blown away or be washed into the sea or to simply consolidate itself into a lump lying on the floor. The area is likely to remain a hazard for a very long time indeed. After the structure has collapsed completely and all the corrugated sheet has either blown away or disintegrated with rust substantial quantities of asbestos are likely to remain lying on the floor waiting to be disturbed. Sooner or later it seems reasonable to expect that GSGSSI will feel a moral and environmental obligation to get in and de-contaminate these areas. This may well be easier and more economical to do 50 or 100 years time when the bulk of the structures will have gone. This is not entirely a council of despair – the positive aspects being:

- It is possible for closely supervised teams to go into the stations in the right weather conditions. So making an educational film, doing further recording of data, retrieving some objects are all possibilities.

- The buildings will no doubt continue to collapse but the evidence of what the buildings were used for and the extent and richness of the site may well be more complete in archaeological terms than they would be if a Grytviken-style clean-up was carried out.

There is also the question of commitment to future expenditure. Despite the clean-up operation at Grytviken there is still a need for significance ongoing expenditure to keep the site safe and visitable. A maintenance plan prepared by Morrison Construction after a survey in 2007/08 provides a formidable list of seventy pages of regular and cyclical tasks to be carried out over a fifteen year period. The list is perfectly sensible and many of the items are simply routine checking of metal roofs, flashings, chimneys etc., after storms. The list probably contains a good number of things that every property owner knows would be sensible, but which are hardly ever done. Checking timber annually for signs of fungal or insect attack; inspecting roof and floor voids for signs of vermin; checking the hinges, bolts and locks on doors; all these are good examples of things that are sensible, but generally only done if a building owner notices a problem. Leaving aside the items that probably will not get done there are a series of major tasks that must be done to keep these buildings in good order. External repainting every five years or so; checking of the electrics in all occupied buildings every fourth year and PAT testing every second year; annual testing of the fire fighting equipment; servicing the heating equipment; these are all essential items.

The work to maintain the occupied buildings on the Grytviken site is considerable. It is not clear how much this maintenance schedule has been used over the last two seasons and whether this routine work has been costed. To carry out all the work listed implies that a number of specialist contractors will be needed on the site on an annual basis (electricians, heating engineers, fire equipment specialists, painters and decorators, general builders) and that the bill will run into several tens of thousands of pounds each year.

The present maintenance schedule makes no reference to the remaining pieces of equipment and the supporting frameworks nor to the work that may be needed by the three whaling ships. The ships are already in need of urgent attention to deal with the collapsing funnel and deck section on '*Dias*' and to either remove or reseal the asbestos. In the longer term the continued rusting of the hull will either need to be addressed or the slow collapse of those ships must be accepted. The bulk of the remaining plant is robust and will continue to corrode gently for many years to come. However, even if gentle decay is an accepted long-term strategy there will be a need for ongoing health and safety work if the general access by visitors is to be permitted. The upright boilers will eventually need to be lowered to the ground; the smaller components on the plant and supporting framework are likely to come loose as their fixing corrode, the remaining platforms will become unsafe and this will make inspections more difficult.

The conclusion must be that whilst the extensive (and expensive) clean-up operation has allowed public access and has dramatically reduced the maintenance and health and safety concerns, these have not 'gone away'. Long-term maintenance will require ongoing finance and management. Even with good regular maintenance the problems will change and the management regime will need to respond to those changes. By contrast the policy of 'doing nothing' at the other sites (other than enforcing the safety exclusion zone) requires only modest levels of expenditure and is probably no more damaging in 'conservation' terms than the alternative of a clean-up along the lines of Grytviken.

8.0 Discussion and Recommendations

There are some difficult decisions facing the Government of South Georgia and until those policy decisions are made it is probably premature to start to formulate any conservation policies. This report concludes with a suggestion as to the policy decisions that need to be made and a series of specific recommendations for action on these sites. Given the poor state of the structure at the remaining stations and the serious contamination with asbestos there is no prospect of any sort of quick-fix or partial job. The scale of the challenge is very large.

8.1 Questions of Policy

8.1.1 Is the present situation with only Grytviken accessible and all the other stations with a 200 metre exclusion zone acceptable?

The answer to this question would appear to be yes. Grytviken with its Museum, Church and Shackleton's Grave and the Post Office is clearly the major attraction for most visitors. The 200 metre exclusion zone will be unpopular with a minority of visitors who wish to see something particular and with some scientists who wish to work in the area of the stations. However, there does seem to be the possibility of training some staff who would be able to supervise visits for specific purposes within the exclusion zone. This would be infinitely cheaper than starting to clean-up all the stations.

8.1.2 Does GSGSSI have the appetite to do a major clean-up operation at some, or all of the stations or to embark on a more costly conservation exercise?

This is a major hurdle to leap. The priority of the Government to date has been to deal with the environmental issues with work and fundraising focused on the rat eradication programme. There are other high priority environmental programmes, the next being the eradication of the reindeer. The 'South Georgian: Plan for Progress Managing the Environment 2006-2010' was drawn up with the impacts on the landscape, flora and fauna of human activity in mind. The commitment to conserve or restore the cultural heritage of the whaling stations is given little weight to this document. The key heritage polices commit the Government to:

- Maintaining a list of historic sites
- Taking expert advice when making decisions which may affect heritage values
- Planning activities to avoid degradation of areas of historical significance
- Continuing a programme of documentation and conservation of heritage buildings and sites **as funds will allow**

As far as specific policies for the whaling stations are concerned the Plan commits the Government to:

- Make all of the whaling stations safe for visitors **when resources allow**
- Removal of heavy oil, asbestos and other hazardous material of buildings
- **The aim would be** to conserve as much of each of the original whaling stations and associated equipment as possible to maintain their heritage value

These policies appear to be vague compared to similar policies for visitors or human impacts. The tone of the 'as funds will allow' and 'the aim would be' suggests that the task seems to be too large and that the priority for the Government for the foreseeable future will be the environmental concerns.

8.1.3 Would the Government welcome the status of 'World Heritage Site' or being on the World Monument Fund's 'Watch List'?

There seems to be little prospect of either of these in the next few years, but the question should be addressed. The status associated with this sort of designation would certainly be a help in terms of fundraising, but it would also imply a good deal of outside interest, interference even, in the fate of the remaining stations and in how the Government goes about dealing with them. There would be a good deal of pressure to adopt a much more conservation minded approach to the work at the other station(s) than the work at Grytviken.

8.1.4 Would the Government considering handing over the responsibility for the stations to the South Georgia Heritage Trust or some similar body set up for the purpose of conserving the stations?

An independent trust might well find it easier to raise funds from private individuals, corporate donors and charitable trusts than the Government would. To go down this route implies that it would be possible to fund (or found) a trust that would be willing to take on such a major liability. From the Government's point of view the advantages that a trust would have in fundraising may be more than off-set by (i) the loss of control of the project and (ii) the fear that if it all went wrong the problem with simply land back in the Government's lap.

8.1.5 Is maintaining the 200 metre exclusion zone an acceptable way forwards?

This may well be the only viable way forwards unless some unforeseen revenue appears. The zone has the advantages of being relatively simple and inexpensive to maintain. It minimises the chance of any accident to visitors. In conservation terms it leaves all the buildings and objects in the appropriate places and as a potential source of information for industrial archaeologists of the future.

It is clearly not as good as a proper conservation based consolidation and repair of the sites but it is arguably better (in conservation terms if not in environmental terms) than the sort of clean-up carried out at Grytviken.

8.1.6 Future maintenance work at Grytviken – can this be properly funded?

Before embarking on any work at the remaining stations it would be sensible to ensure that there are sufficient funds to meet the ongoing costs at Grytviken. The repair and maintenance schedule prepared by Morrison Construction in 2008/09 may be over ambitious but there is a good deal of commonsense within it. All the buildings in use need to be maintained along with roads, paths, bridges and jetties used by visitors. Nybrakka (27) represents an ongoing liability as do the Main Store (10) and the Engineering Workshop (11). The three ships will need an increasing amount of attention over the next few years as will the remaining sections of the support structure around the plant. There is also the question of the items of plant which are now in the open. Are they to be left to rust away or is some active maintenance/conservation work contemplated?

Before considering work at the other stations the ongoing costs of maintaining Grytviken should be realistically assessed together with some clear understanding with the South Georgia Heritage Trust as to who is responsible for what.

8.1.7 What is the Government's aim with regard to these sites? They are mere curiosities unless they are used to tell the story of the whaling industry. If they are about the history of the whaling industry then what is the best way to communicate this?

Perhaps the best way to tell the history of the industry would be to carry out major conservation work at Leith where much of the plant still survives. However, given that there is little likelihood of funding this in the immediate future the question should perhaps be rephrased as 'does Grytviken in its present form give a clear impression of the scale and scope of the industry'.

The answer is that all the information is there but the visitor has to work quite hard at present to understand the scale of the industry. The information boards on the site are not all that easy to understand. The Museum certainly has plenty of information about whaling, but it is by no means a 'Whaling Museum' as it contains a good deal of other information about the flora and fauna of the island and surrounding sea. The amount of information in the Museum is good for a visit of several hours – a far cry from the dwell time of half an hour or less of the average visitor.

Perhaps a more immediate way of communicating the information is needed. Interpreters out on site when visitors are present or perhaps a short film display that combines historic footage and photographs with explanations of why the site looks as it does.

8.2 Specific Recommendations

There would seem to be a good case to be made for some or all of the Whaling Stations to be regarded as candidates for World Heritage Status. They are certainly highly significant in cultural heritage terms and the sites are authentic and highly unusual in terms of their completeness. However, the conclusion is that the best opportunity for conserving one of those sites was most probably at Grytviken. The buildings were arguably in better condition than elsewhere and it was the only site where a ship can readily land equipment and where there are facilities for accommodating people. The clean-up operation has effectively removed much of the interest from this site and it no longer has the authenticity or interest to generate the World Heritage Status.

The recommendations that follow below are made on the basis that it seems likely that there will be little appetite for raising large sums of money for a conservation-based clean and repair at one or more of the stations. The South Georgian Government will have a major commitment to provide a proper maintenance (and possibly conservation) programme for Grytviken, and to continue to enforce the 200 metre exclusion zone at the other stations. It is assumed that the major fund raising effort of the Government will be for the environmental programmes and that the best that can be hoped for is to fund more recording and education and interpretation work related to the shore-based stations.

The recommendations below are those of the author of this report. They may need to be reconsidered in the light of any decisions made by GSGSSI about the policy questions that have been raised in the previous section.

General

1 The abandoned whaling stations have the 200 metre exclusion zone enforced around them with the notices setting out the reasons for the zone made clearer and more specific.

2 A policy decision is made to let the stations other than Grytviken decay naturally with no further attempt to either conserve them or to carry out an environmental clean-up.

3 Discussions are held with interested parties in Norway to agree on a united approach to the interpretation of the cultural heritage of the whaling stations.

4 Bjørn Basberg and colleagues be approached directly for his recommendations as to what further work would be desirable to fill in any gaps in the industrial archaeology of the stations.

5 Either training be offered to some existing members of GSGSSI staff or a new staff member or members are appointed with appropriate experience to act as guides and advisors to occasional visitors to the stations.

6 That consideration be given to commissioning a film crew to prepare a detailed record of what remains at the stations at present before too much more decay and collapse occurs.

7 Access should be given to either the South Georgia Museum staff or another suitably qualified curator to have access under supervision to the sites for the purpose of considering whether any objects should be withdrawn, either for their own safety or to fill specific gaps in the present collection.

8 Apart from the limited withdrawal of objects for the Museum that nothing further be removed from any of the sites.

9 No further consideration should be given for the foreseeable future to any scheme for the retrieval of scrap metal from the sites.

10 Consideration should be given to improved educational material about the whaling station sites and about South Georgia in general. The material should also contain information about the scope of the whaling industry and the role South Georgia played in it.

11 Education materials should be as widely available as possible – certainly on all cruise ships visiting Antarctic waters and potentially available for downloading by schools.

12 The web sites of both the South Georgia Government and also of the South Georgia Heritage Trust should be expanded to include more historic images and more historic information. Some of the images from the recent survey work could well be included.

13 The stations should be monitored and visited from time to time to review the condition and safety and to ensure that the 200 metre zone is still appropriate.

Grytviken Harbour

1 A new and realistic maintenance plan is prepared for the occupied buildings and other facilities in regular use on the site. This plan should be costed and then should be resourced to ensure that the agreed tasks can be properly completed.

2 A decision should be made about the future of the three ships. Is a serious attempt to be made to conserve them or are they to be left to disintegrate?

3 The maintenance plan needs to be extended to cover the other structures on the site. Structures like the framework of the Meat Cookery and the Glue Water plant will need to be inspected regularly on safety grounds even if no maintenance is contemplated. Maintenance of secondary items.

4 A decision should be made about the intention towards the remaining pieces of machinery and plant on the site. Is any conservation work contemplated to extend their life? If so, is this something that will be taken on by the Museum staff or is it a separate problem to be dealt with by GSGSSI?

5 Discussions should be held with the Trust and/or with the Museum staff over the message that is being delivered to the visitor (both the physical visitor and the visitor to the website). There may well be other messages that both the Trust and GSGSSI wish to get across to the public, but the physical remains of the heritage at Grytviken (and the other sites) are all about the whaling industry and arguably this should be the primary message.

6 Consideration should be given to holding a suitable stock of corrugated iron sheeting on the site that allows for a more appropriate repair of the remaining buildings. The temporary use of the profiled steel sheets on the remaining buildings is disappointing.

7 Some space might be given over in the Museum or perhaps in the new gallery to showing a short presentation on the whaling industry to bring home to visitors the significance of what they are seeing.

Husvik Harbour

1 A very limited clean-up should be undertaken of the south end of the site to remove the loose asbestos from the pipes and off the floor. This should allow the 200 metre boundary to be redrawn to allow the continued use of the Radio House (61) and the Manager's House (64).

2 The remaining asbestos in the roof void of the Manager's Villa (64) should be removed and a careful check should be made at the same time on the Radio House (61).

3 A safe route should be marked out to allow visitors to have safe access to the graveyard which is well outside the 200 metre zone.

4 A decision should be made about the Karrakatta. With some modest clean-up work around the Catcher Barracks (70), the Winch House (74) and the Mechanical Workshop (75) it would be possible to make this area safe to allow some conservation work on the ship should this be considered desirable.

Stromness Harbour

1 A clear decision needs to be made with regard to the Old Manager's Villa now known as The Foreman's Barracks and Mess (16). There is specific interest in this house as this was the building which Shackleton arrived at in 1916. In practice this building is in very poor condition and is close to the most contaminated area of the site. It is difficult to imagine any circumstances in which it can be visited by the public in the foreseeable future. However, the decision not to repair it should be a conscious one rather than something ignored.

2 A safe route could be potentially be provided to the south of the stream to allow the Graveyard to be visited. This might require a slight relaxation of the 200 metre boundary, but the most contaminated buildings are well away from this area.

Leith Harbour

1 Leith does have the only remaining area of plant still in recognisable condition. If any plant and associated buildings and all the machinery that goes with the buildings were to be preserved then this would be the place to do it. The task will become more difficult and costly as the years pass. However, it would be good to make a policy decision with regard to this. Is there any aspiration to conserve and repair this area or is it simply beyond the realm of realistic funding?

2 A safe route could be provided to the Cemetery (90) which is on the south side of the stream well to the south of the site. This might require some slight relaxation of the 200 metre zone. No access can be given without close supervision and the right weather conditions to the Old Cemetery (89) in the centre of the site.

Prince Olav Harbour

1 There does not seem to be anything sensible to be done at Prince Olav other than (potentially) more recording and some filming. After this it is probably best abandoned to the Fur seals.

9.0 Sources

Books

1 *The Island of South Georgia*, Robert Headland, ISBN 978-0-521-42474-5 Cambridge University Press 1984

2 *Grytviken seen through a Camera Lens*, Stig-Tore Lunde, ISBN 82-303-0221-9 Insitute Minos 2004

3 *The Shore Whaling Stations at South Georgia*, Bjørn L Basberg, ISBN 82-7099-394-8 Novus Forlag 2004

4 *South Georgian Antarctic Sanctuary*, Kevin Schafer, ISBN 1-899-392-440 Coach House Publications

5 *Antarctic Isle*, Niall Rankin, Collins 1951

6 *Of Whales and Men*, R B Robertson 1954, published by Alfred A Knopf (New York)

Reports

1 *Buildings of Historic Interest at King Edward Point South Georgia*, Jane Cameron, January 2000 SPRI Ref. 130430

2 *South Georgia Whaling Station Survey*, Desk Study and Field Study, Poles Apart 1998 SPRI Ref. 123187

3 *Oil Spill Contingency Plan for King Edward Point Applied Fisheries Research Station*, R H Dominic and J R Shears, published by British Antarctic Survey 3rd Edition 2000

4 *Land and Visitor Management Report*, Sally Poncet 2003, SPRI Ref. 723:504:06

5 Various documents from the *SPRI Archive*, including folders reference 1228/3/1; 1228/3/3; 1228/21/1 and 1228/25/1

6 *South Georgia Whaling Station Survey*, Desk Study and Field Strategy (marked draft), SPRI Catalogue (723):711 123187

7 *South Georgia Whaling Station Survey*, Final Report and Annex, prepared by 'Poles Apart' P O Box 89, Bourn, Cambridge CB3 7TF and dated May 1999

8 *South Georgia Plan for Progress Managing the Environment 2006-2010*, published by British Antarctic Survey ISBN 1 85531 306 5

9 *Environmental Management Plan for South Georgia*, Elizabeth McIntosh and David Walter, published by British Antarctic Survey, undated but appears to be 2000

10 *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*, published by ICOMOS, marked Draft May 2010

11 *South Georgia 2009, 20th Annual General IAATO Meeting, June 2009*, by Richard McKee, Government of South Georgia and the South Sandwich Islands 2009

12 *Metallic Materials Availability at the Four Major Whaling Stations on the Island of South Georgia*, by Dan Weinstein and Ben Hodges, 1998

Websites

1 World Monuments Fund
http://www.wmf.org.uk

2 UNESCO World Heritage Centre
http://whc.unesco.org

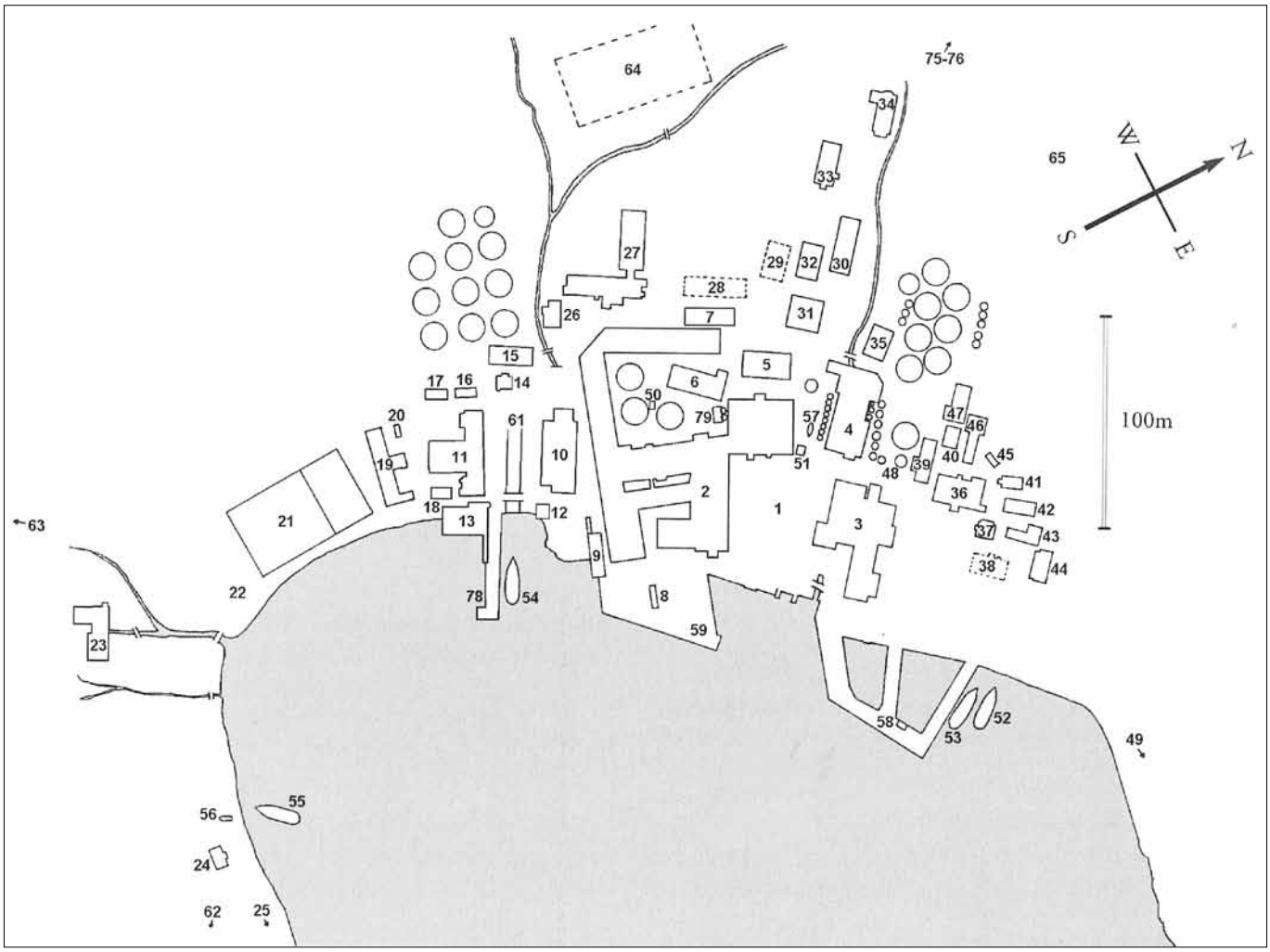
3 South Georgia and South Sandwich Islands
http://www.sgisland.gs

4 Hvalfangstmuseet
http://www.hvalfangstmuseet.no

5 English Heritage
http://www.english-heritage.org.uk

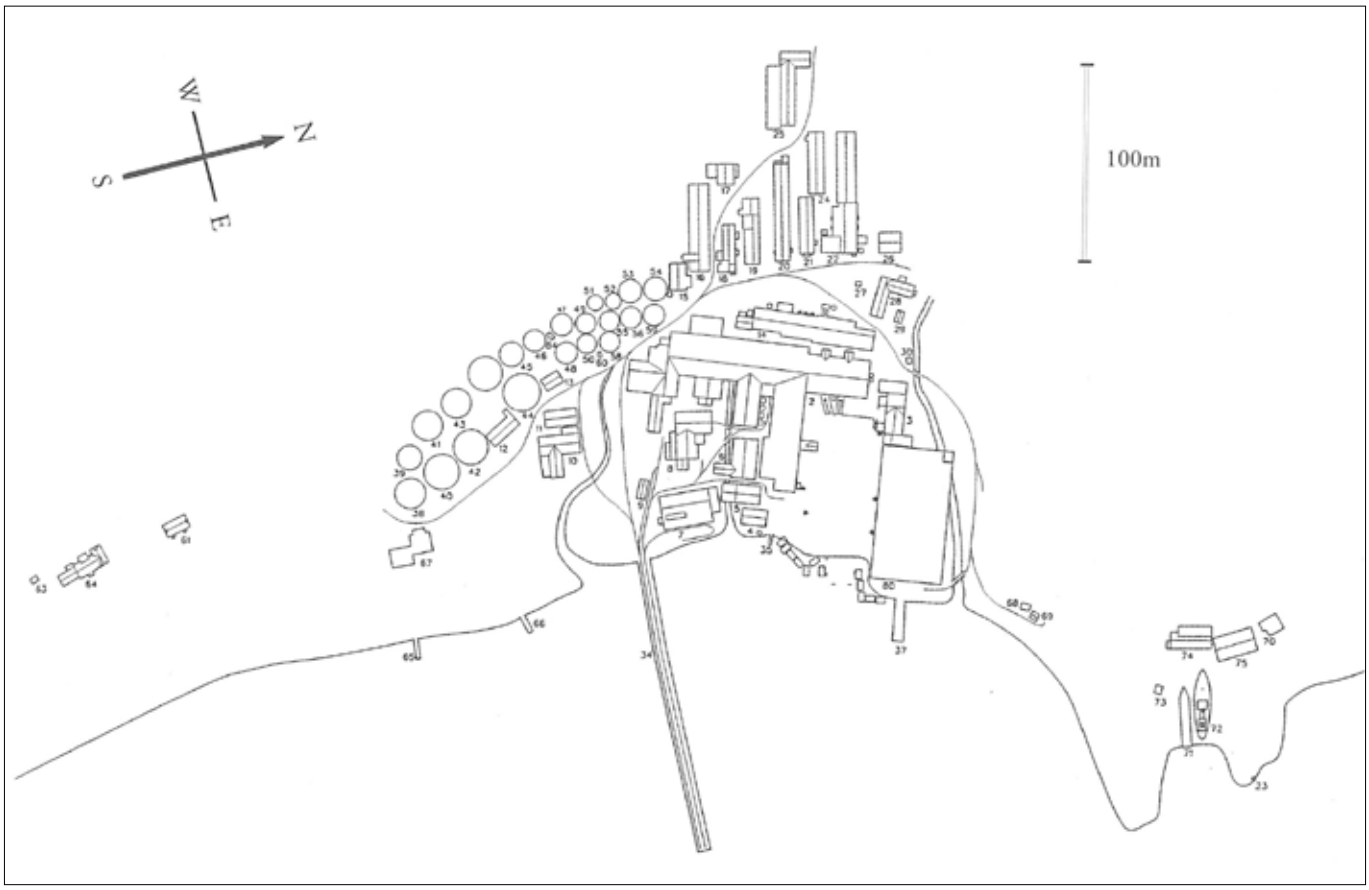
Appendices

Location plans are taken from the appendices of the book 'The Shore Whaling Stations of South Georgia' published by Novus Press, 15 September 2004 (ISBN-10: 8270993948) by Bjørn L Basberg. The numbering system for all the structures and the names all replicate those in the book for easy identification and comparison.



Grytviken Harbour

1 ..... Flensing platform
2 ..... Plant
201 ..... Meat plant
209 ..... Bone Cookery
215,216 ... Guano Factory
220,221 ... Guano Store
222 ..... Boiler house
3 ..... Blubber cookery and Boiler House
4 ..... Separator and Power Plant
5 ..... Glue-water Plant
6 ..... Carpenter's and Pattern-maker's workshop
7 ..... Store and Laboratory
8 ..... Catcher Provisions Store
9 ..... Catcher Rope Store
10 ..... Magasinet: Main Store
11 ..... Engineering Workshop, Smithy and Foundry
12 ..... Paint Store
13 ..... Plating Shop
14 ..... Winch House
15 ..... Pump House
16 ..... Store for Mechanical Workshop
18 ..... Foundry Store
19 ..... Pigsty
20 ..... Henhouse
21 ..... Freezer
22 ..... Teatersalen: former barracks
23 ..... Hydro-Electricity Power Plant
24 ..... Radio, Asdic and Radar Workshop
25 ..... Radio Station
26 ..... Slaughterhouse
27 ..... New Barracks and Mess
28 ..... Long Barracks: former barracks
29 ..... Barracks - former
30 ..... Barracks
31 ..... Russebrakka: barracks and laundry
32 ..... Bath House
33 ..... Cinema
34 ..... Church
35 ..... Hospital
36 ..... Villa: Manager's House
37 ..... Foremen's Barracks
38 ..... Foremen's Barracks - former
39 ..... Provisions Store No. 1
40 ..... Provisions Store No. 2
41 ..... Provisions Store No. 3
42 ..... Potato Store
43 ..... Bakery
44 ..... Cold Store
45 ..... Coffee Roasting House
46 ..... Slop Chest
47 ..... Bakery and Barracks
48 ..... Salt Store
49 ..... Gunpowder Magazine
50 ..... Pump House
51 ..... Watchroom
52 ..... The *Dias* - sealing vessel
53 ..... The *Albatros* - sealing vessel, former catcher boat
54 ..... The *Petrel*- catcher boat
55 ..... The Louise - Barque
56 ..... Motorboat
57 ..... Motorboat
58 ..... Harpoon Jetty
59 ..... Tijuca Jetty
60 ..... Floating Dock - sunken
61 ..... Catcher slip
62 ..... Cemetery
63 ..... Dam
64 ..... Soccer Field
65 ..... Skijump
66-74 ..... Bridges
75 ..... Dam, lower
76 ..... Dam, upper
78 ..... Jetty
79 ..... Pump House
80-117.... Tanks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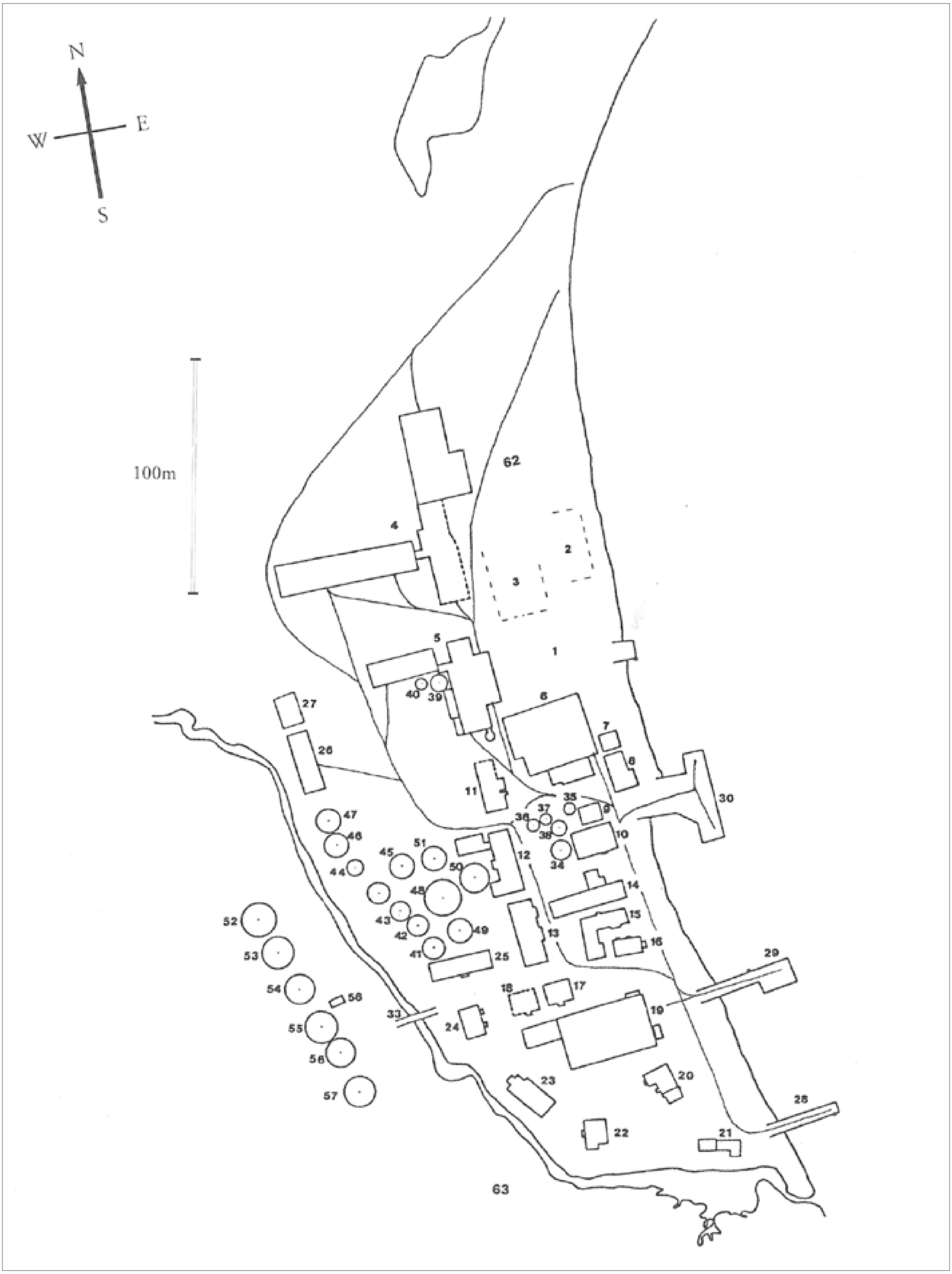
Husvik Harbour

1 ..... Flensing platform
2 ..... Plant
  203 ..... Meat Cookery
  207 ..... Bone Cookery
  208 ..... Guano Factory
  211 ..... Guano Store
3 ..... Blubber Cookery
4 ..... Meat Extract Plant
5 ..... Separator and Glue-water Plant
6 ..... Laboratory and Store
6 ..... Store
7 ..... Catcher Store
8 ..... Workshops
9 ..... Paint and Lubricating Oil Store
10 ..... Main Store
11 ..... Laundry and Slop Chest
12 ..... Pump House
13 ..... Cooper and Soap-maker's Shop
14 ..... Boiler House
15 ..... Bath House
16 ..... Provisions Store and Bakery
17 ..... Office and Slop Chest
18 ..... Barrack
19 ..... Craftmens' Barracks and Hospital
20 ..... Ems Barracks
21 ..... Teie Barracks
22 ..... Orwell Barracks and Mess
23 ..... Lavatory
24 ..... Cinema and Library
25 ..... Pigsty
26 ..... Cold Store and Barracks
27 ..... Valve House
28 ..... Carpenter's and Butcher's Shop
29 ..... Whale-meat Store
30 ..... Store
31 ..... Bridge
32 ..... Bridge
33 ..... Railway
34 ..... Main Jetty
35 ..... Jetty
36 ..... Jetty
37 ..... Jetty
38-59 ..... Tanks
60 ..... Store
61 ..... Radio House
62 ..... Bridge
63 ..... Out-house/shed
64 ..... Villa: Manager's House
65 ..... Jetty
66 ..... Jetty
67 ..... Foremen's Barracks - foundation
68 ..... Gunpowder House
69 ..... Store
70 ..... Catcher Barracks
71 ..... Catcher Slipway
72 ..... Karrakatta: Whale Catcher
73 ..... Store
74 ..... Winch House
75 ..... Mechanical Workshop/Plating Shop
76 ..... Soccer Field
77 ..... Soccer Field
78 ..... Cemetery
79 ..... Dam
80 ..... Meat Freezer – foundation
81 ..... Dam
82 ..... Tank
83 ..... Ski Jump
84 ..... Shed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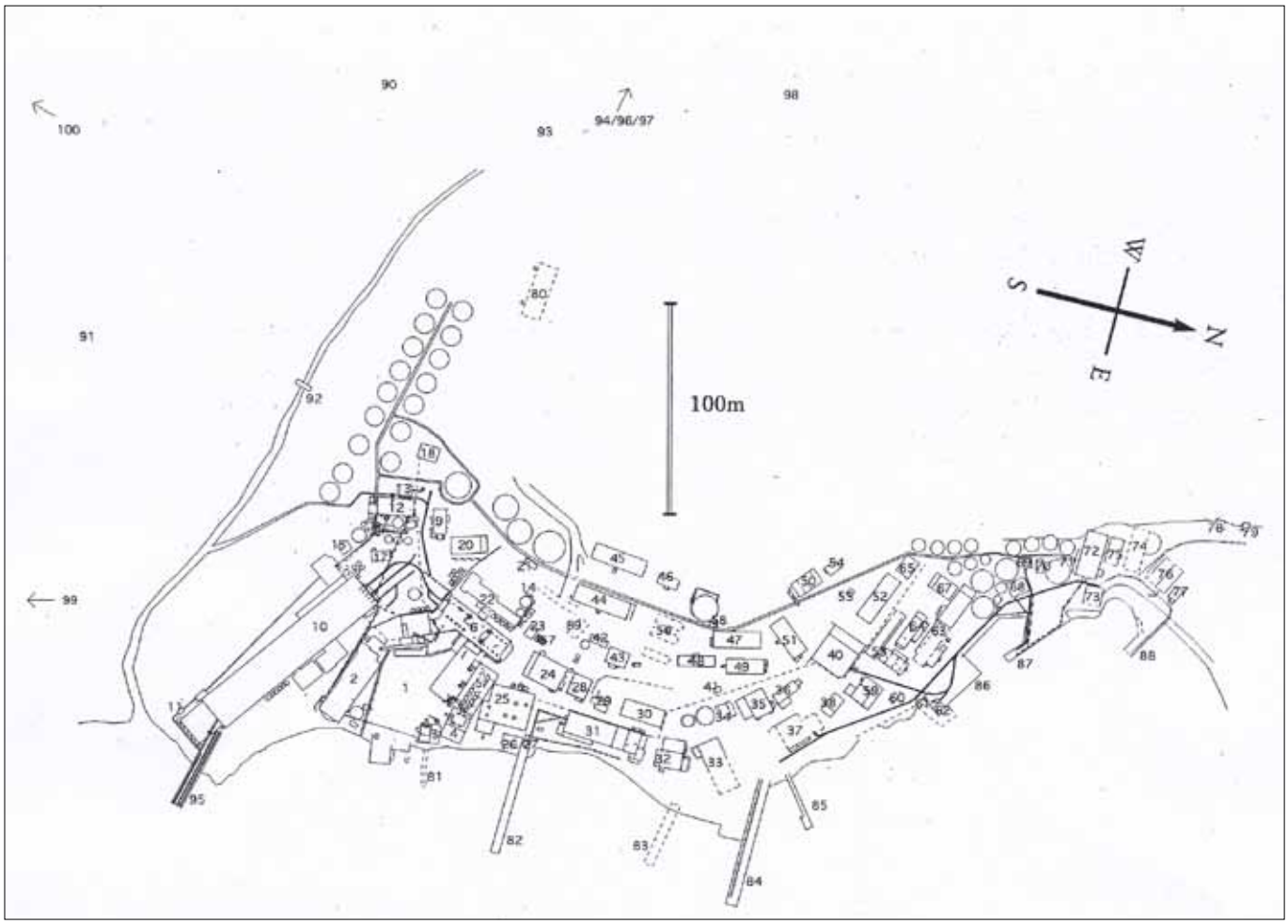
Stromness Harbour

1 ..... Flensing platform
2 ..... Bone Cookery, dismantled
3 ..... Meat and Bone Cookery, dismantled
4 ..... Guano Factory and Store
5 ..... Boiler House and Power Station
6 ..... Workshop, former Blubber Cookery
7 ..... Store
8 ..... Store No. 1
9 ..... Pump House
10 ..... Store No. 2
11 ..... Carpenter's Shop
12 ..... Plating Shop, Foundry and Store
13 ..... Kitchen and Mess
14 ..... Kitchen and Mess
15 ..... Radio Workshop and Store
16 ..... Foremen's Barracks and Mess
17 ..... Barracks No. 1
18 ..... Barracks No. 2, ruin
19 ..... Mechanical Workshop and Plating Shop
20 ..... Villa: Manager's House
21 ..... Dock Store
22 ..... Officers' House
23 ..... Cinema, Theatre and Library
24 ..... Bath House
25 ..... Barracks No. 3
26 ..... Pigsty
27 ..... Store, Sheep and Henhouse
28-30 ..... Jetties
31-32 ..... Bridges: not on the map
33 ..... Bridge
34-57 ..... Tanks
58 ..... Pump House
59 ..... Pump House: not on the map
60 ..... Pump House: not on the map
61 ..... Winch House: not on the map
62 ..... Railway
63 ..... Cemetery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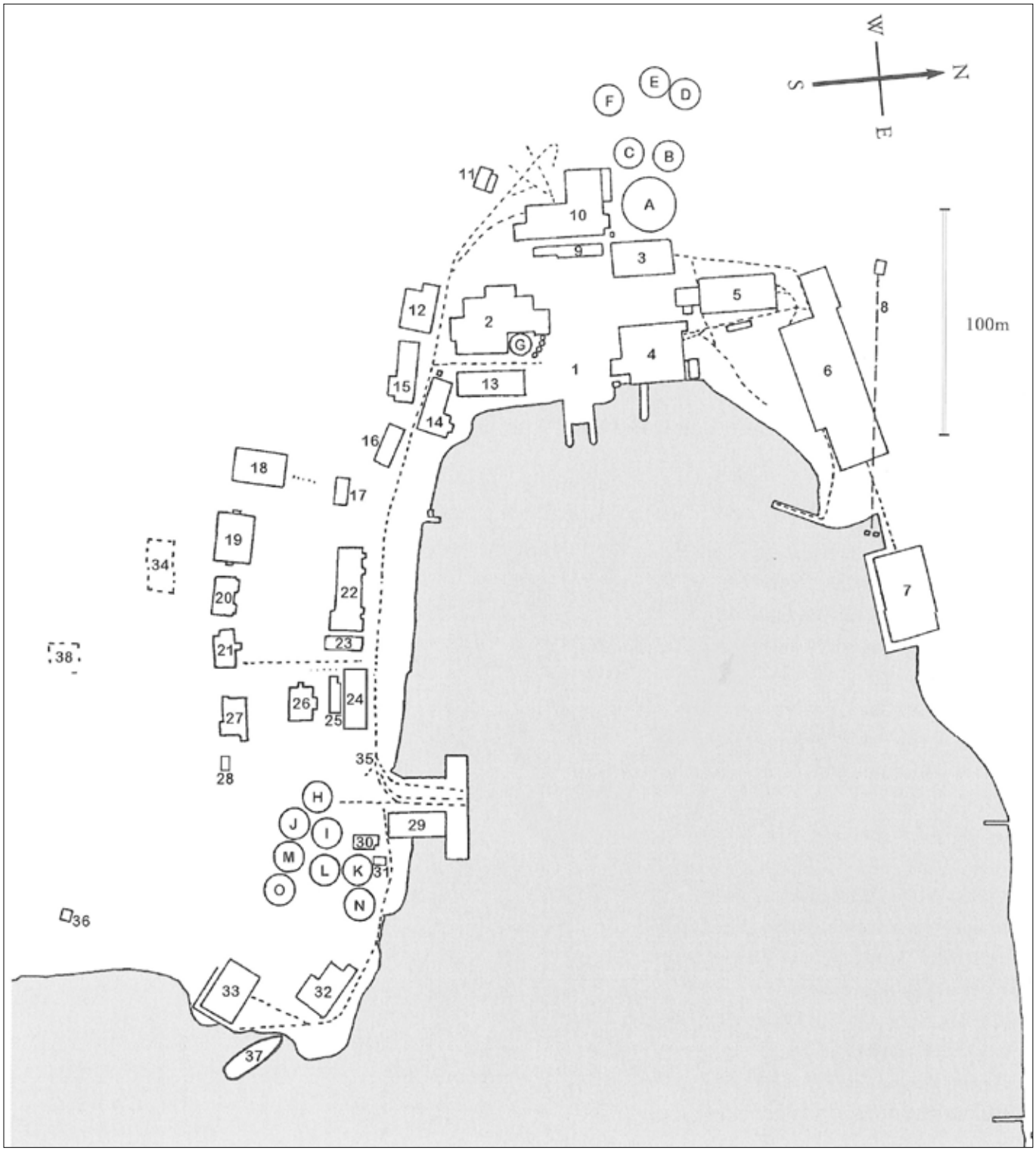
Leith Harbour

1 ..... Flensing platform
2 ..... Blubber cookery
4 ..... Hartmann plant
5 ..... Meat cookery
6 ..... Bone cookery & Rose-Down plant
7-9 ..... Numbers not in use
10 ..... Guano Factory and Store
11 ..... Valve house
12 ..... Solubles Plant
13 ..... Solubles Plant
14 ..... Pump House
15 ..... Stores and WC
16 ..... Number not in use
17 ..... G-Barracks
18 ..... Pump House
19 ..... Store/ former cinema
20 ..... Laboratory
21 ..... Pump House
22 ..... Separator Plant
23 ..... Pump House
24 ..... Power Station
25 ..... Boiler House
26 ..... Battery Store
27 ..... Welding Plant
28 ..... Catcher Store
29 ..... Boiler-cleaner's Store
30 ..... Plumber's Shop
31 ..... Machine Shop & Engineering Office
32 ..... Carpenter's Shop
33 ..... Pigsty
34 ..... Store and Garage
35 ..... Slaughterhouse
36 ..... Radio and Radar Workshop
37 ..... Plater's Shop
38 ..... Hen House
39 ..... Number not in use
40 ..... Steward's Store
41 ..... Substation
42 ..... Store
43 ..... Bay View Barracks
44 ..... Trehus Barracks
45 ..... Hillside Barracks
46 ..... Welfare Hut
47 ..... E-Barracks
48 ..... Swedish Hut
49 ..... Grand Barracks
50 ..... Bellevue Barracks
51 ..... Hospital
52 ..... D-Barracks
53 ..... C-Barracks and Hvilen
54 ..... Customs House
55 ..... Substation
56 ..... Greenhouse
57 ..... Distilled water plant
58 ..... Pump House
59 ..... Villa: Manager's House
60 ..... Green House
61 ..... Catcher Store
62 ..... Store and Coal Store
63 ..... Mess and A-Barracks
64 ..... Provisions Store
65 ..... Laundry
66 ..... Number not in use
67 ..... Bathhouse
68 ..... Pump House
69 ..... Pump House
70 ..... Hose Store
71 ..... Butterworth Store
72 ..... Store No. 1
73 ..... Store No. 2
74 ..... Store No. 3
75 ..... Paint Store
76 ..... Brick Store
77 ..... Power Substation
78 ..... Gunpowder House
79 ..... Gunpowder House
80 ..... Cinema
81 ..... Pier
82 ..... Municipal Pier
83 ..... Pier
84 ..... Catcher Pier
85 ..... Pier
86 ..... Quay
87 ..... Coronda Pier
88 ..... Karret Pier
89 ..... Cemetery
90 ..... Cemetery
91 ..... Soccer Field
92 ..... Bridge
93 ..... Bridge to cemetery
94 ..... Dam
95 ..... Guano Pier
96 ..... Valve House
97 ..... Pump House
98 ..... Gun Platform
99 ..... Gun Platform
100 ..... Skijump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Prince Olav Harbour

1 ..... Flensing Platform
2 ..... Blubber Cookery
3 ..... Upper Meat Cookery
4 ..... Lower Meat Cookery
5 ..... Bone Cookery
6 ..... Guano Factory
7 ..... Guano Store
8 ..... Elevated Railway
9 ..... Winches
10 ..... Boiler House
11 ..... Provisions Store
12 ..... General Store
13 ..... Refinery and Laboratory
14 ..... Carpenter's and Butcher's Shop
15 ..... Blacksmith Shop
16 ..... Foundry
17 ..... Bathhouse
18 ..... Old Barracks
19 ..... New Barracks
20 ..... Office and Slop Chest
21 ..... Hospital
22 ..... Kitchen and Mess
23 ..... Bakery
24 ..... Provisions Store
25 ..... Old Foremen's Barracks
26 ..... New Foremen's Barracks
27 ..... Villa: Manager's House
28 ..... Henhouse
29 ..... Jetty Store
30 ..... Boiler House
31 ..... Pumps
32 ..... Pigsty
33 ..... Pigsty
34 ..... Cinema
35 ..... Elevated Railway
36 ..... Magazine/Gunpowder House
37 ..... The Brutus: barque
38 ..... Cemetery

1675	The London merchant Antoine de la Roche made the first discovery of South Georgia when blown off course after rounding Cape Horn. No attempt is made to land.
1756	South Georgia sighted from the 468 ton Leon commanded by Gregorio Jerez sailing out of St. Malo.
1775	Captain James Cooke in command of the 462 ton HMS Resolution in company with the 336 ton HMS Adventure commanded by Tobia Furneaux landed at Possession Bay on Tuesday 17th January 1775.
1786	The start of commercial whaling probably starts with the sailing from London of Lord Hawksbury under the command of Thomas Delano.
1800	Captain Edward Fanning sailing out of New York in the Aspasia on 11th May 1800. He leaves an account of taking 57,000 fur seal skins and of 17 other sealing vessels working in South Georgia that season and he estimates that some 112,000 fur seal skins in total were taken in the season.
1819	The sealing activities interrupted by the Napoleonic wars ad by the war between Great Britain and the US. Sealing resumes in the 1814/15 season. The Russian expedition commissioned by the Tsar under the command of Captain Bellingshausen in Mirnyi reaches South Georgia on 27th December 1819.
1823	Captain James Weddell sailed from Britain in December 1822 in the Jane with a crew of 22. He arrived in South Georgia on 12th March 1823 after recording a 'furthest south' in the Weddell Sea at 74° 15'.
1843	First British Letters Patent issued to provide for the government of the Falkland Islands and Dependencies. They provided that the governor of the Falklands should also be Governor of the Dependencies. They were subsequently revised in 1876, 1892, 1908 and 1917.
1881	The first of a series of Ordinances to regulate sealing and to protect seals was enacted. This provided for a closed season from 1st October to 1st April. This was largely ignored in South Georgia.
1882	The German contingent of the first International Polar Year were based on South Georgia from August 1882 - September 1883. The eleven members of the expedition established a base at Royal Bay from where they carried out a major scientific programme.
1902	Swedish South polar expedition led by Nordenskjold establish a base at Snow Hill. The ship the Antarctic commanded by C.A. Larsen sails to South Georgia arriving 22nd April and remaining until 15th June. Grytviken was used as the main anchorage for the period of the exploration. Larsen and the Antarctic were subsequently involved in the loss of the Antarctic, crushed by ice whilst trying to relieve the Nordenskjold party. All survived and were rescued on 8th November 1903 by the Argentine ship Uruguay commanded by Captain Irizar.
1904	C.A. Larsen arrives at Grytviken with 60 men and three ships Louise, Rolf and Fortuna to establish the first shore based whaling station. The first whale oil was produced on 24th December 1904. Larsen's company was the Compania Argentina de Pesca which he had set up after being rescued in 1903. The company initially had no permission from the South Georgia Government to set up the station.
1906	The Governor of the Falkland Islands, William Allardyce, issues regulations restricting the number of whaling licenses that will be issued.
1906	Steam trawler *Dias* built in England.
1907	Two Norwegian companies Tønsberg Hvalfangeri and Sandefjord Hvalfangerselskab run factory ships in Husvik and Stromness harbours.
1908	South Georgia gazetted as a dependency of the Falkland Islands.
1909	Mr J. I. Wilson appointed Stipendiary Magistrate on 20th November 1909 and arrived in Grytviken on 30th November 1909. He was accommodated at Grytviken until a residence was completed in September 1912 on King Edward Point.

1909	Further legislation passed to regulate sealing on South Georgia.
1909	The station at Ocean Harbour opened by Christian Nielsen and Co of Larvik.
1910	The Scottish company Christian Salvesen open the station at Leith Harbour.
1910	The shore based station at Husvik opened.
1912	Magistrates House completed on King Edward Point.
1912	Whale catcher Karrakatta built in Norway at Akers Mek. Verksted, Kristiana (Oslo).
1913	The shore based station at Stromness opened. Customs shed built at King Edward Point.
1914	The customs shed at King Edward Point partially converted to form a gaol.
1914	Shackleton's Imperial Trans Antarctic Expedition arrived in Grytviken on 5th November 1914 to prepare for the expedition. They remained there for a month.
1916	The James Caird lands at King Haakon Bay and Shackleton, Worsley and Crean make the 36 hour trek across the Island arriving at Stromness on 20th May 1916.
1916	The Southern Whaling and Sealing Company based in South Africa opens the station at Prince Olav Harbour.
1919	The Ocean Company merges with Sandefjord Hvalfangerselskab.
1920	Ocean Harbour site closed and all the useful equipment moved to Stromness.
1922	Sir Ernest Shackleton returns to South Georgia on the Quest to organise the Shackleton-Rowlett expedition. Shackleton dies of a heart attack on 5th January 1922. He is buried at Grytviken after initially being transported to Montevideo ready to be taken to England before it is discovered that Lady Shackleton wishes him to be buried in South Georgia. The granite gravestone sent out from Britain is erected in 1928.
1924	A prefabricated building "Discovery House" is dispatched to South Georgia as a base for the Discovery Expedition.
1925	Discovery House is erected in January and February being completed on 20th February and occupied by a staff of three zoologists, a hydrologist and a technician led by Dr. N. A. Mackintosh. They start to study the whales being landed at Grytviken.
1925	A successful stern slipway is developed on the vessel Lancing which makes it a great deal easier to process whales on board and so open the way for the pelagic whaling fleet.
1926	The RRS Discovery finally set sail from Dartmouth under the command of Captain Stenhouse and arrives at South Georgia on 20th February 1926. This marks the beginning of a major series of research projects, known as the Discovery Investigations, which were carried out until 1951.
1928	The *Petrel* built in Norway at Nylands Mek Verksted, Oslo.
1930	The season of 1930/31 marks the high point of commercial whaling with Norway and Britain as the dominant players.
1931	In the wake of the collapse in world trade the bulk of the whaling fleet remains tied up for the 1930/31 season.
1931	The station as Husvik, Stromness and Prince Olav are all closed

1932	Leith is also closed for the 1931/32 season as well as the other stations closed previously. Only Grytviken remains open. Prince Olav Harbour never reopens. Stromness does not reopen as a whaling station but opens as a ship repair yard for Leith.
1939	Grytviken continues to operate throughout the war years of 1939-45. Leith opens only for the season of 1941/42.
1945	World shipping suffered greatly during the Second World War and there is doubt as to whether whaling will be resumed. Britain, Norway, Japan, the USSR, South Africa and the Netherlands all decide to build new whaling fleets.
1946	The founding of the International Whaling Commission.
1950	The launch of the BAS ship RSS John Biscoe.
1950	In 1950 the Government staff at King Edward Point included the Magistrate, Customs Officer, wireless operators, mechanics, meteorologists, naturalist and two policemen.
1963	Grytviken and Leith stations are leased to Japanese companies.
1964	Grytviken closed.
1965	Leith is closed.
1965	British Antarctic Survey move to King Edward Point.
1968	HMS Endurance put into service as an ice patrol vessel.
1969	The last civil servants leave and BAS take over the civil functions with the base leader as resident Magistrate.
1970	The launch of the BAS ship RRS Bransfield.
1970	The first tourist ship Lindblad Explorer lands passengers on South Georgia.
1972	Bird Island opened as a permanent BAS base.
1972	British Antarctic Survey staff make a first survey of the contamination from leaking fuel tanks.
1974	The original meteorology station is demolished.
1975	Grytviken is declared an 'Area of Special Tourist Interest' (ASTI).
1978	Christian Salvesen Co, who had acquired the leases of all the shore based stations, approached by the Argentine businessman Constantino Davidoff about the possibility of salvaging scrap metal from the stations. A contract signed in 1980.
1981	Davidoff arrives at Leith Harbour without having gone through the 'port of entry' King Edward Point.
1982	On 25th March a ship carrying Argentine troops arrives at Leith to 'assist' Davidoff's men. On the 2nd April the Falkland's are invaded and on 3rd the Argentine vessel Bahia Paraiso enters Cumberland East Bay and attacks the Royal Marine garrison at King Edward Point. After some initial resistance the Marines surrender and are arrested along with the BAS staff at KEP. On 21st April British troops land and on 25th KEP is retaken. South Georgia is used as a naval base for the invasion of the Falklands leading to an argentine surrender on 14th June.
1985	South Georgia and the South Sandwich Islands become a separate British Dependent Territory on 3rd October 1985.

1989	Salvesen carry out a reconnaissance expedition to determine the degree of contamination and the salvage work that is needed.
1989	Industrial archaeological survey of Husvik and Stromness (NARE 89/90).
1990	February to May Salvesen carry out clean-up operation at Grytviken.
1991	January to May Salvesen carry out clean-up operations at Husvik, Leith, Stromness and Prince Olav.
1991	April and May inspections by Robert Headland and Nigel Bonner report that the work has been satisfactorily completed.
1992	The South Georgia Whaling Museum established. All Salvensen's leases on the stations relinquished to the GSGSSI with no further liability on them.
1992	Industrial archaeological survey of Grytviken (NARE 92/93).
1996	Industrial archaeological survey of Leith Harbour (NARE 96/97).
1997	Foundation in Norway of Oyas Venna - Friends of South Georgia.
1999	Survey of the South Georgia Whaling stations 'Poles apart'
2000	The British garrison is finally withdrawn from South Georgia after 18 years of military rule.
2000	Environmental Management Plan for South Georgia' prepared by E. McIntosh and D.W.H. Walton for South Georgia Government and British Antarctic Survey.
2000	A report prepared by J. Cameron "A brief survey of the buildings of historic interest at King Edward Point. This report was apparently not published.
2001	Foundation of South Georgian Association.
2002	Report on the asbestos contamination at the whaling stations by Thames Laboratories.
2003	A major clean up at Grytviken of the asbestos and dangerous buildings carried out by the Chilean company AWG CS ltd. The clean-up is paid for by the South Georgia Government.
2003	Report on the 'Industrial Heritage Values' of the whaling stations prepared by B.L. Basberg, S-T. Lunde and G. Rossness. Published at Sandefjord in 2003.
2005	Foundation of South Georgian Heritage Trust.
2006	South Georgia: Plan for Progress, Managing the Environment 2006-2010 published by BAS on behalf of GSGSSI in July 2006.
2009	Industrial archaeological survey of Prince Olav Harbour and Ocean Harbour (LASHIPA 6)

Inspection of the Disused Shore-Based Whaling Stations

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Purcell Miller Tritton LLP, 3 Colegate, Norwich, Norfolk NR3 1BN
norwich@purcellmillertritton.com www.purcellmillertritton.com